The Association of Special Libraries and Information Bureax

Report of Proceedings

of the

EIGHTH CONFERENCE

held at

Lady Margaret Hall, Oxford

SEPTEMBER 18th-21st, 1931

THE OBJECTS OF THE ASSOCIATION ARE: To examine, foster, and co-ordinate the activities of special libraries, information bureaux, and similar services; to act as a clearing-house for these services; to develop the usefulness and efficiency of special libraries and information bureaux under whatever titles they may function; and generally to promote, whether by conferences, meetings, or other means, the wider dissemination and the systematic use of published information.

The Association aims at assisting members who desire information of any kind to get into touch with the appropriate library or other body specializing on the subject; it does not itself attempt to build up any centralized organization to provide the detailed information direct.

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Editorial Note.

THE papers that follow constitute a record of the proceedings of the Eighth Conference of the Association. Written papers were, as a rule, prepared in advance by the speakers, and these have been reprinted in full. No verbatim reports of the discussions were made, but, with the aid of notes taken by the Stewards of the meetings and provided by the various contributors to the discussions, as full a report has been printed as the limitations of space permit. It should be noted that where contributions have been summarised because of this limitation any reader interested may see the full report at the ASLIB office. The editors take this opportunity to acknowledge their indebtedness to all those members of the Conference who have sent in notes of their contributions.

An index to the contents of the Report is printed at the end. Copies of the Reports of the seven previous Conferences are still available, and the fifth Report contains an index to the first five.

These Reports are indexed in the Industrial Arts Index of The H. W. Wilson Company, of New York.

16, Russell Square,
London, W.C.1.

List of Visitors to the Eighth Conference.

1	Miss M. S. Aslin	Rothamsted Experimental Station.
2	E. A. Baker, D.Lit., M.A.	London School of Librarianship.
3	Miss K. Bartlett	Incorporated Association of Architects and Surveyors.
4	Theodore Besterman	Society for Psychical Research.
5	Harry Blackwood, M.A., F.E.I.S.	Educational Institute of Scotland.
6	A. Basil Blake, B.Sc.	
7	W. Bonser, B.A., Ph.D., F.L.A.	University of Birmingham.
8*	S. C. Bradford, D.Sc.	The Science Museum.
9*	Mrs. S. C. Bradford	
10	R. Brightman	British Dyestuffs Corporation, Ltd.
11	J. W. H. Brown	National Union of Teachers.
12	S. S. Bullock	ASLIB.
13	P. C. Bursill, F.L.A.	Woolwich Public Libraries and Museum.
14	Miss C. V. Butler, M.A.	
15	A. C. Cameron, M.A.	City of Oxford Education Committee.
16	Miss L. de M. Carey	General Information Bureau.
17	Prof. A. M. Carr-Saunders	
18*	Miss Margaret E. Cleeve	Royal Institute of International Affairs.
19	Miss Frances Consitt	
20	W. L. Cooper, M.A., M.C.	Bristol University.
21	Mrs. W. L. Courtney	Carnegie United Kingdom Trust.
22	Miss Gertrude Cowlin	College of Nursing.
23	F. W. Crews	Institute of Transport.
24	B. C. Curling	Institute of Marine Engineers.
25	V. W. Dale	British Electrical Development Association.
26	W. Llewellyn Davies, M.A.	National Library of Wales.
27	Mrs. W. Llewellyn Davies	
28	Miss Llewellyn Davies	
29*	T. R. Dawson, M.Sc., F.I.C.	Institution of the Rubber Industry and Research Association of British Rubber Manufacturers.
30	Miss B. M. Dent, M.Sc.	Metropolitan-Vickers Electrical Company, Ltd.
31	Miss L. B. Dibben	Ministry of Labour.
32	S. P. Dobbs	Cadbury Brothers, Ltd.
33	Miss Vera Douie	London and National Society for Women's Service.
34	Miss K. M. Dowding	Chiswick Products, Ltd.
35	H. Hudson Dumville	Rowntree and Company, Ltd.
36	J. J. Eaton	"The Yorkshire Post."
37*	E. T. Elbourne	Institute of Industrial Administration.
38*	H. Farr	Cardiff Public Libraries.
39	G. Ellis Flack	University of Birmingham.
40	Mrs. G. Ellis Flack	
41	Miss E. M. Forcey	Transport and General Workers Union.
42	E. W. Fraser-Smith, M.A., A.M.Inst.C.E.	North East Coast Institution of Engineers and Shipbuilders.
43	S. W. Gibson	British Thomson-Houston Company.
44	Mrs. S. W. Gibson	
45	T. W. Gibson, B.Com.	Hannah Dairy Research Institute.
46*	W. H. Gibson, O.B.E., D.Sc., B.Sc.Econ., F.I.C., F.Inst.P.	Linen Industry Research Association.
47	Miss Mizpah Gilbert, A.L.A.	Brentford and Chiswick Public Libraries and Museums.
48	L. D. Goldsmith, B.Sc.,F.I.C.	Research Laboratories of the General Electric Company.
49*	Sir Francis Goodenough, C.B.E.	
50*	Sir Benjamin Gott	
51	Miss E. Griffiths	"The Daily Mail."
52	R. T. Gunter, M.A., LL.D., F.L.S., F.R.G.S.	Old Ashmolean Museum.

53	Miss G. E. Hadow	Society of Oxford Home-Students.
54	Richard Haxby	Leeds Public Library Committee.
55	B. M. Headicar, F.L.A.	London School of Economics and Political Science, and Joint Standing Committee on Library Co-operation.
56	F. Henn	Imperial Institute.
57	Councillor P. Hide, M.A., C.I.E.	
58	Miss M. Clive Hildyard, B.A., Ph.D.	Birkbeck College.
59	Miss M. G. Hildyard	
60	R. H. Hill, M.A., F.L.A.	Bodleian Library.
61	F. A. Hoare	National Union of Teachers.
62	C. E. Hobbes	International University Society.
63	J. E. Hodgson	Royal Aeronautical Society.
64	G. C. Holliday, B.A.	Gas, Light, and Coke Company.
65	Professor B. W. Holman, O.B.E.	Association of Scientific Workers.
66	H. V. Horton, B.Sc., A.I.C.	Royal Photographic Society.
67	Miss D. W. Hughes	Career Advisory Bureau.
68	Captain C. W. Hume, M.C., B.Sc.	British Science Guild and University of London Animal Welfare Society.
69	D. Graham Hutton	Royal Institute of International Affairs.
70	R. S. Hutton, D.Sc.	British Non-Ferrous Metals Research Assoc.
71	Mrs. R. S. Hutton	
72	H. L. Jackson	H. K. Lewis and Company, Ltd.
73	M. Neville Kearney	Federation of British Industries.
74	Miss D. Knight, B.A.	National Institute for Research in Dairying.
75	Miss A. L. Lawrence, M.B.E., M.A., LL.B.	British Medical Association.
76	A. M. Leney	Leplay House (Institute of Sociology).
77	Miss Norma H. Lewis, B.A., F.L.A.	League of Nations Union.
78	E. E. Lowe, B.Sc., Ph.D.	Leicester Public Libraries, Museum, and Art Gallery.
79	John McAdam, F.L.A.	Warrington Municipal Library.
80*	G. A. Macartney	League of Nations Union.
81	Miss F. McKechnie, M.Sc.	British Xylonite Co., Ltd.
82	A. Markham	German Information Bureau.
83*	Miss Florence E. Marks	Horace Plunkett Foundation.
84	H. M. Martin, F.C.G.I., M.I.Mech.E.	"Engineering."
85	J. P. Maxton, M.A., B.Sc., B.Litt.	Agricultural Economics Research Institute.
86*	R. Bennett Miller, M.A., F.E.I.S.	Educational Institute of Scotland.
87	F. C. Mitchell	London Press Exchange, Ltd.
88	Professor Gilbert Murray, M.A., LL.D., D.Litt., F.B.A., F.R.S.L.	
89	Miss D. K. I. Myles	The Mond Nickel Company, Ltd.
90*	Professor John L. Myres	Geographical Association.
91	Sir Frederic Nathan, K.B.E.	Royal Society of Arts.
92	R. H. New	Clarendon Press.
93*	Colonel L. Newcombe, T.D., F.L.A.	National Central Library.
94	Miss L. A. Ornstein, B.Sc.	Institute of Metals.
95	Charles W. Orr	Central Electricity Board.
96	Miss A. K. Osborne	Brown-Firth Research Laboratories.
97	J. H. Pafford, M.A., F.L.A.	National Central Library.
98	Miss E. W. Parker	Mond Nickel Company, Ltd.
99	Norman Parley	Percy Lund Humphries and Company, Ltd.
100	Miss M. Pears	British Cast Iron Research Association.
101	Alderman John O. Pelton	Croydon Public Libraries.
102	Miss R. E. Pennington	

103	Dr. Albert Predeek	Bibliothek der Technische Hochschule zu Berlin.
104	Miss D. M. Pritchard	ASLIB.
105	Mrs. M. H. Pritchard, M.A.	
106	F. B. Ransford	Western Electric Company, Ltd.
107*	David E. Roberts	South Wales Institute of Engineers.
108	H. L. Robinson	Journal of the Textile Institute.
109	Miss G. M. Roseveare	
110	T. T. Rush	National Federation of Iron and Steel Manufacturers.
111	Kenneth Ryde, M.C., A.L.A.	Croydon Public Libraries.
112	E. L. Sellars, M.Sc.	Brunner, Mond and Company, Ltd.
113*	Col. the Master of Sempill	
114	Miss M. Shaw, B.Sc.	J. Lyons and Company, Ltd.
115	S. A. Skan	Royal Botanic Gardens
116	Dr. E. Shenkman	
117	Sir Charles Sherrington, O.M., D.Sc., F.R.S.	
118*	Miss Irene M. Shrigley	Institute of Bankers.
119	Miss Dorothy Shuckburgh	Board of Education.
120	Eric N. Simons	Edgar Allen and Company, Ltd.
121	G. F. Herbert Smith, M.A., D.Sc.	British Museum (Natural History).
122	Nowell C. Smith	
123	S. Conolly Smith,	International University Society.
124	Councillor W. H. Smith	Leicester Public Libraries, Museum, and Art Gallery.
125	C. A. Spencer, M.Sc.	Department of Scientific and Industrial Research.
126	Alderman Charles Squire	Leicester Museum and Libraries Committee.
127	Mrs. P. M. Stevenson, M.A.	
128	Councillor A. J. Stubbs, M.Inst.C.E., M.I.E.E.	Croydon Public Libraries.
129	J. H. Sutcliffe	British Optical Association.
130	Mrs. J. H. Sutcliffe	
131	A. W. Swan, B.A.Sc.	Brush Electrical Engineering Co., Ltd.
132	Paul R. L. Tingey	Powell Duffryn Steam Coal Company.
133	H. T. Tizard, C.B., F.R.S.	
134	Miss R. M. Tupper-Carey, M.Sc.	Imperial Bureau of Plant Genetics.
135	H. W. Tyler	American University Union.
136*	Mrs. H. W. Tyler	
137*	Major L. Urwick, O.B.E., M.C., M.A.	International Management Institute.
138*	G. A. A. de Voogd	Bataafsche Petroleum Inaatschappy.
139	G. B. Willey, A.R.S.M., F.I.C.	Hadfields, Ltd.
140	L. C. Wharton, M.A., F.L.A.	British Museum.
141	Miss M. K. E. Allen, B.Com.Sc.	Linen Industry Research Association.
142	Dr. A. Batley	Kodak, Ltd.
143	Miss Curtis Brown	Commission on Educational and Cultural Films.
144	W. Chetham-Strode	Kodak, Ltd.
145	Miss Cytovitch	Imperial Bureau of Animal Genetics.
146	F. Donker Duyvis	Nederlandsch Instituut voor Documentatie en Registratuur.
147	R. H. Hole	Stowe School.
148	Miss M. Locket	British Instructional Films, Ltd.
149	Mrs. C. S. Orwin	Agricultural Economics Research Institute.
150	Miss Nancy Powell	J. Walter Thompson Company.

* *Prevented from attending.*

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Reception and Opening Dinner.

Delegates were received before dinner by MR. H. T. TIZARD, President of the Association, and the Council. After dinner MR. TIZARD delivered a short presidential address, dealing with the effect of the present economic crisis on the position of the Association, the difficulty of obtaining financial support to enable to to do even a fraction of the things it exists to do, and the increasing importance of its work. " One of the chief duties of everyone who has the future of civilisation at heart," he said, " is to study the causes of the recent depression with the help of every available source of knowledge."

PROFESSOR A. M. CARR-SAUNDERS then addressed the delegates on " Some Problems of Professionalism."

He defined a profession as a whole-time occupation involving the application of skill acquired through a prolonged course of special training. Professional people included a very large proportion of those upon whose knowledge and efficiency the due functioning of society depended. Hence the importance to the community of their organisation. The idea of State intervention in professional matters was not new, but the mediæval system of regulating the details of professional practice had not been replaced in the modern State by any logical or comprehensive scheme, although the State had been forced to intervene in certain cases, primarily to distinguish between the qualified and unqualified, but also to prohibit unqualified practice. How far was such intervention justified, and what should be its limits ? The four chief cases where public control had been found necessary were the medical group, where the service might be said to be vital ; the legal, where it was fiduciary ; the merchant navy, where the public safety was involved ; and the State's own employees.

So far, State intervention had been justified. It had disadvantages. The ordinary man needed the services of doctors or lawyers in a hurry and had not sufficient means of distinguishing between the competent and the incompetent, and it was therefore proper that the State should indicate the competent. On the other hand, he might never need to employ an architect, an accountant, an actuary, or an engineer, and, if he did, could make his choice at leisure. There seemed, therefore, no public grounds for an extension of State intervention in these fields.

However necessary State intervention might be, there was no justification for the extraordinary complexity of existing procedure or the lack of uniformity of practice which prevailed in connection with State regulation of the professions. In some cases control was exercised through various Government Departments. In the case of veterinary surgeons and solicitors the custody of the register had been committed to what was originally a voluntary association, while in that of medicine these functions had been assigned to the General Medical Council, a special body created for the purpose, working under the Privy Council. This last form of State control was admirably adapted to the end in view, and there was much to recommend the recognition of the Privy Council as the organ of all State regulation of the professions. The general mechanism would be that exemplified by the working of the General Medical Council. Such a development was favoured by the fact that the Privy Council had already exercised certain functions in connection with the chartered bodies responsible for the organisation of professions which had not received statutory recognition. It would tend to that systematic handling of all professional problems by a single Department of State which was so much to be desired.

As regards the maintenance of professional standards, two questions had to be considered, the standard of qualification and the standard of practice. With the latter, attention must be paid both to competency and integrity, but there were grave difficulties in the way of disciplinary action on grounds of incompetency, especially in the case of medicine where it was essential that development should not be checked by any fear of penalties for unsuccessful treatment.

In connection with the initial qualification the nature of the preliminary education and the final test of competency for admission to the register had to be considered.

[*Contd. on p.* 30

*The Year's Work of Aslib.

In introducing this report a word should be said about the innovation of presenting it at the Annual General Meeting. Hitherto it has been given at one of the General Sessions of the Conference, usually as part of the programme of the opening evening. There was some complaint, however, that this limited the time for its discussion, and the Council therefore decided to allot more time to the Annual General Meeting so that, after formal business had been dealt with, the report could be presented and discussed. They hope that this will meet with the approval of members, that a useful discussion will be the result, and that members will no longer feel that they have insufficient opportunity to consider the domestic affairs of the Association.

The Association's Council and Committees.

The first meeting of the new Council, elected at the last Annual General Meeting, was held on October 23rd, 1930, when Dr. R. S. Hutton was elected chairman and Colonel Sir Frederic Nathan vice-chairman. By his re-election as hon. treasurer the Association had also secured the continued help of Brigadier-General Mowat, who for two years had also served as chairman of Council. During the year eight meetings of the Council have been held.

The Council appointed a Committee, consisting of Mr. J. J. Eaton, Mr. B. M. Headicar, Mr. J. E. Hodgson, Colonel L. Newcombe, and the honorary officers, to make arrangements for the Conference, and this Committee has held a number of meetings. In addition there have been many meetings of a sub-committee consisting of the honorary officers, at which much Association business has been discussed preparatory to its consideration by the Council.

Finance and Membership.

The audited annual accounts of the Association have been circulated and will be before the members at the Annual General Meeting, so there is no need to refer to them here in detail. Twenty-eight new members have been enrolled during the year, but these have been offset by resignations, and the membership position remains practically as it was a year ago. There has been no relaxation of effort on the part of the Council or the Secretary to gain new members, and, in view of the general depression, it may be a matter for congratulation that the strength of the Association has been maintained. But although the greatest possible economy of expenditure has been exercised, by reduction of staff, removal to smaller offices, and other means, the income of the Association is still considerably less than the minimum expenditure necessary to carry on its work on the present basis. In consequence of this state of affairs the reserve funds of the Association have been reduced, and the balance is barely sufficient to carry on for another year. Increased income is urgently

* This Report was presented and discussed at the Annual General Meeting.

necessary, for unless by increased membership or by finding some new source of income our position can be strengthened, the continued existence of ASLIB will have to be considered. In the meantime, after much careful consideration, the Council have decided that it would be a mistake to reduce the Association's activities and impair its effectiveness before that becomes absolutely necessary.

Local Correspondents.

At last year's Conference there was some discussion as to the possibility of forming local groups of ASLIB members in various districts, with a view both to making the Association better known and to increasing its usefulness to the members concerned by providing the means for direct local contact. Thanks to the energy and interest of Mr. J. J. Eaton, of Leeds, and some other members, a start has been made during the year by the establishment of such groups in Yorkshire and in Lancashire and Cheshire. For these two areas respectively Mr. Richard Haxby, of Leeds Public Libraries, and Miss B. M. Dent, of the Metropolitan-Vickers Electrical Company, have acted as local correspondents. In February in Leeds Mr. Haxby, with the assistance of an Acting Committee, organised a public meeting, at which about 130 were present. Another meeting was held in June, when an address was given by Mr. Vincent Garrett. Both these meetings were reported in "ASLIB Information". In Manchester several meetings of the members have been held, at which possible local activities have been discussed and put into operation. The distribution of ASLIB literature in their areas has also been undertaken by the local correspondents.

Although, so far, no results have been achieved by way of increased membership, these will undoubtedly follow in due course and, in the meantime, the other purpose in view in forming the groups is being achieved.

The Panel of Expert Translators.

This service has been in operation for about a year and it is possible now to form a judgment as to the success of the scheme. The Panel now includes the names of about 200 approved translators, and an analysis of the languages in which they are competent to work gives the following table:

Arabic	2	Latin	4
Czech	5	Norwegian	4
Danish	7	Polish	5
Dutch	19	Portuguese	11
French	110	Rumanian	2
German	128	Russian	29
Greek	2	Spanish	45
Hungarian	2	Swedish	10
Italian	35	Others	24

The last group includes such uncommon languages as Bulgarian, Fijian, Finnish, Hadendow, Hindustani, Lithuanian, Malay, Pali, Pashtee, Persian, Rotuman, Ruthenian, Samoan, Sanskrit, Serbian, Sinhalese, Slovak, Tongan, Ukraine, and Urdu.

Very great care has been exercised in selecting from the applicants, but that is not to say that a definite standard of knowledge to which

every accepted translator must attain has been arbitrarily fixed. Each case has been taken on its merits and the linguistic qualifications considered in conjunction with the applicant's special knowledge of subjects and his experience. Some of those enrolled can write and speak fluently the foreign language concerned, but others who feel competent to translate from the language only have not necessarily been excluded for that reason.

An analysis of the subjects covered by the Panel would take too much space. Naturally, the Panel is strongest in subjects under pure and applied science and particularly in engineering and in industrial chemistry, but its range is gradually extending, and it is hoped that, before long, it will be equipped to meet any demand which may be made upon it. Enquiries received have shown that, in many cases, users want a translator who has had a particular kind of experience—*e.g.*, in advertising work—and the exhaustive questions which applicants are required to answer, amounting to a short autobiography, make it possible to select from the Panel a man or woman who meets the requirement.

There is no means of knowing exactly how much use has actually been made of the Panel. In response to enquiries seventy-four introductions have been given to prospective clients, but how many transactions have resulted is not known, nor in how many cases an original introduction has produced successive pieces of work for the translator. Probably it is safe to say that twenty-five per cent. of the translators enrolled have received work through the medium of the Panel and as a start this can be regarded as satisfactory. There is still a great deal to be done, however, in making known the existence of this service and in urging upon those concerned the necessity for the employment of competent translators.

The ASLIB Enquiry Bureau.

Although no exact records of enquiries have been kept, it is thought that the number dealt with this year has been in excess of previous years, and there is no doubt that this service, from which help can be obtained in securing specialised information, continues to be one of the chief advantages of membership of the Association.

The ASLIB Directory.

The termination of Miss Walton's engagement as part-time assistant has resulted, unavoidably, in a diminution in the amount of work done in connection with the Directory records. Nevertheless, these are being maintained in fairly good order. Apart from the collection of information regarding new sources the existing entries are now, three years after publication, being revised systematically. Amendments and additions are published in " ASLIB Information".

The sales of the Directory during the year were thirty-eight copies, thirty by the Oxford University Press and eight by the Association itself.

" ASLIB Information."

This quarterly bulletin of the Association has become firmly established, and No. 9 will have been issued to members before the Conference. Usually in connection with some particular matter

members have often expressed their opinions on the usefulness of the bulletin, but comments of a critical nature are invited, as well as suggestions as to features that might be of value. The bulletin is not an ambitious publication and, of course, its main purpose must be to be the medium of informing members on matters of ASLIB business and work.

Proposed Business Man's Directory.

Evidence provided by the enquiries addressed to ASLIB and from other sources has indicated the need for a Directory concerned exclusively with sources of information for the use of business people, and the Council have had under consideration the preparation of a Directory of this kind. In order to examine the proposal in greater detail they appointed a sub-committee, consisting of Mr. H. W. Acomb, Mr. B. M. Headicar, and Mr. Albert Parker, to consider it.

The work of this sub-committee has not proceeded far enough to enable them to report, but it is hoped that discussions during this Conference, which, to a greater extent than usual, is devoted to the informational needs of business people, will be of assistance in carrying the matter a stage further.

ASLIB and Classification.

In last year's report the establishment was announced of a Joint Committee of ASLIB and the British Society for International Bibliography, as recommended by a special sub-committee set up by the Council. During the year Colonel L. Newcombe was obliged to resign from the Joint Committee owing to pressure of other work, and his place has been taken by Mr. A. F. Ridley. The Joint Committee has held many meetings, they have made a survey over a limited field of the systems of classification in use in special libraries in this country, and in response to an evident demand have issued a leaflet describing the Universal Decimal Classification and its uses. They are studying the question of the use of the system for classifying the contents of periodicals. In conjunction with representatives of the Institut International de Bibliographie they have had a conference with Mr. Godfrey Dewey with a view to carrying further uniformity between the Dewey Decimal Classification and the Universal Decimal Classification. They are also going into the question of the provision of an edition of the Universal Decimal Classification in English, which is much needed.

Apart from the work of the Joint Committee a considerable number of applications have been received from members for advice and assistance in connection with the classification of their libraries and records.

The Abstracts Conference.

Problems connected with the preparation and publication of abstracts of scientific and technical literature have been discussed at many ASLIB Conferences. In the belief that there would be value in an informal discussion and interchange of experience with regard to these problems by those concerned with the work, Mr. Tizard convened a special conference at the Imperial College of Science and

Technology in July. Thirty-five persons attended the meeting, which was fully justified by the discussion which took place. This was concentrated mainly on the subject of methods of dealing with foreign publications. Finally it was suggested that it would be of great value to those present and to others to have information about the methods employed, and a Committee was appointed to prepare a questionnaire for issue to the bodies concerned. The Committee consists of Mr. A. A. Eldridge (Bureau of Chemical Abstracts), Mr. C. A. Spencer (Department of Scientific and Industrial Research), Mr. W. A. Pool (Imperial Bureau of Animal Health), Mr. Freeman Horn (British Aluminium Company), and Dr. R. S. Hutton (British Non-Ferrous Metals Research Association and Institute of Metals). The Committee have held their first meeting and are engaged in drafting the questionnaire, which, it is hoped, will be issued soon after the Conference.

The Training of Special Librarians.

It was announced last year that the Senate of the University of London had sanctioned the alternative course, on the lines proposed by ASLIB, to enable graduates in faculties other than arts to receive a course of training for work in special libraries and attain the diploma of the London School of Librarianship with similar exemptions to those granted already to university graduates. The opening of the course was duly advertised, but, owing to the small number of students who applied, it was thought inadvisable to start the course last October. The news of this decision came as a great disappointment to the Council, and the matter was taken up in correspondence with Dr. Baker. This spring they were advised that the course would begin definitely this year, and they have taken such steps as they could to ensure its success. A leaflet about the course was sent to all members, who were asked to do everything they could to make known the new facilities and to urge the necessity for the employment of properly-trained staff in special libraries and information bureaux.

"Librarianship as a Career."

By arrangement between the Incorporated Associations of Head Masters and Head Mistresses of Public Secondary Schools and the Ministry of Labour a series of pamphlets has been published by H.M.S.O. with the general title "Choice of Careers". The last of these to be issued deals with librarianship. The Association was asked to advise on this, and was able to make a number of suggestions with regard to it.

Training in the Use of a Library.

The Council had under consideration the resolution on this subject passed at the 1930 Conference. In consultation with the authors of the resolution it was modified slightly to the following form: "Recognising the vital need that students in all faculties should be trained in the efficient use of libraries, the ASLIB Conference urges university and educational authorities to provide systematic instruction in this subject, and particularly to assure that all students should

attend at least one annual lecture by the Librarian of the Institution which they control explaining the organisation and use of the library."

In this form the resolution was forwarded to all universities and university colleges in Great Britain and to many other education authorities. Whilst nothing more than a formal acknowledgment was received in the majority of cases, there were many expressions of approval of the resolution. For example, the Honorary Secretary of the Association of Technical Institutions wrote: "I have much pleasure in informing you that the views expressed in this resolution have the sincere support of my Council, and they have instructed me to circulate copies of the resolution to all other members of the Association . . ."

Education for Salesmanship.

A resolution passed at the 1929 Conference called upon the Council of the Association to prepare and offer evidence before the Board of Education Committee on Education for Salesmanship. It was found, upon enquiry, that oral evidence was not being taken by the Committee, but the Association was asked to submit a written memorandum of its views. Accordingly the Council appointed a sub-committee to prepare this memorandum, which can be seen at the office of the Association. The points stressed were that salesmanship requires a great variety of specialised knowledge of goods, markets, languages, customers, and so forth beyond the power of the individual to acquire. To be efficient in his work the salesman must therefore depend upon a subsidiary service of information which can be provided only by specialists trained in the technique of information work. Such a service means the establishment of suitable information bureaux with trained personnel.

An interim report of the Board of Education Committee, dealing with the question of foreign languages, contained a great deal of evidence to show the need for a service like that supplied by the ASLIB Panel of Expert Translators. The report of the Committee will be published before the Conference, and the Council have been most fortunate in obtaining the consent of Sir Francis Goodenough himself to say a few words about it during the week-end.

The National Central Library.

The new constitution is now at work, and the Board of Trustees and the Executive Committee and its sub-committees formed. The Government's first grant of £3,000 has been, as recommended by the Royal Commission, reserved for the Union Catalogue, Information Department, and Outlier Services, leaving direct purchase to the care of other funds. For this purpose the Carnegie United Kingdom Trustees set aside in December the unexpended balance of the Special Library allocation for the period 1926–30, instead of applying it to the Outlier System; and they have offered to do the same with part or even the whole of the corresponding allocation (£10,000) for 1931–35.

The further grant of £50,000 made by the Carnegie Trustees has enabled the Trustees of the National Central Library to purchase a freehold site and premises in Euston Road for the new home for the

library, thus overcoming the great difficulty of lack of space under which Colonel Newcombe and his staff have been working. The library has been granted a Royal Charter.

The first representative of ASLIB on the Executive Committee of the library was Brigadier-General Magnus Mowat, and he has been succeeded by Dr. Hutton.

The London Public Libraries Union Catalogue.

The informal discussions which are such a pleasant feature of ASLIB conferences have sometimes had important and valuable results. The Union Catalogue of the London Public Libraries and the Guildhall is a concrete example of the useful results of one such discussion, for it was at ASLIB conferences that this project was first discussed on a practical basis.

Mr. Seymour Smith's paper read at the 1927 Conference was, it will be recalled, followed up in 1928 by another paper delivered by Mr. Arundell Esdaile. As a result of resolutions passed at these two discussions a Committee was formed and application for financial support of the scheme was made to the Carnegie United Kingdom Trustees. In 1929 the Trustees generously consented to make possible the work of compiling this gigantic catalogue by offering an initial grant of £1,050 and at least three annual grants of £850.

Work on the catalogue was accordingly commenced in April, 1930, a Committee representing the Carnegie Trust, the contributory libraries, and the professional bodies having been formed under the chairmanship of Mr. T. Gorrie.

At the present time no fewer than 250,000 slips have been received and filed at the National Central Library, where the catalogue is housed. A Union List of Periodicals and Annual Publications has been compiled and circulated to all contributory libraries, and has already been the means of assisting students to locate special publications. Card cabinets containing over 500 trays have been purchased to file the union cards, on which will be indicated the location of the enormous book stock of London's public libraries. Even in its present incomplete state the catalogue has been of value, and when it approaches completion (for no such catalogue can ever become absolutely complete) it will undoubtedly be one of the greatest bibliographical tools in England, both in size and usefulness.

The Durability of Paper.

The report of the special Committee which was set up by the Library Association following upon the resolutions passed at the ASLIB and L.A. Conferences in 1928 was published at the end of last year and attracted a great deal of attention in the press. A summary of the main points of the report was given in the December issue of "ASLIB Information".

The work of the Committee has not ended with the issue of the report. It still has outstanding matters to consider, and is giving attention to the question of securing adherence to its suggestions by bodies concerned with the use of paper. Mr. Bullock has been the representative of ASLIB on the Committee since it was appointed, and other members of ASLIB who sit on it are Mr. G. O. Anderson, Mr. G. H. Palmer, and Mr. Norman Parley.

The Architectural Graphic Records Committee.

In the early part of the year a Committee was formed by bodies interested with the main objects of collecting material for and compiling a central card index of drawings, paintings, prints, and photographs of buildings and their accessories, being more than 100 years old, which are of architectural and historical interest, and of arranging for the custody and upkeep of the index. The lack of such an index has been felt greatly by students, and, as a piece of work in the systematic organisation of information, the Committee's objects were of much interest to the Association. Mr. Bullock was therefore glad to accept an invitation to serve on the Committee, which included two members of ASLIB, Mr. G. H. Palmer, and Colonel L. Newcombe. The Committee has now been formally constituted with a membership consisting of delegates from a number of bodies which include ASLIB, the Library Association, and the National Central Library.

ASLIB and the Publishers.

Members may recall that, at the 1929 Conference of the Association, a resolution was passed dealing with the bibliographical details given in publishers' catalogues. An account of the action taken in regard to this resolution was given last year. Since then Mr. R. Ashton, Librarian of Blackburn, has written to say that his Committee resolved to support the resolution and invited other public library authorities to adopt it also. This has been done, it is learnt, by a great number.

Monographs on Specialised Subjects.

At the 1930 Conference a resolution was passed urging the need for short monographs on subjects of interest to scientists, technicians, and scientific workers, published at a low price. On consideration it appeared to the Council that no purpose would be served merely by forwarding the resolution to publishers and others concerned, but, by correspondence and interviews, the suggestion was taken up and discussed with a number of publishers of scientific and technical works. As the result, an interesting symposium of experience and opinions was collected. Apart from what may be called side-issues, such as the difficulty of distribution because of the booksellers' objection to stocking and handling cheap, paper-covered volumes, and as the advantages of publishing highly-specialised articles in periodicals like the Transactions of the Royal Society, the question resolves itself, from the publishing point of view, simply into a matter of the relationship between the cost of production and the demand for a given volume. Publishers require no encouragement to produce monographs of high quality by competent authors if there is demand enough to make the publication profitable, or even to cover expensest One publisher suggested that the difficulty about demand might be met in certain cases if specialist bodies concerned could co-operate with regard to monographs in their fields for which they though. there was a need.

U.S. Government Publications.

From time to time evidence has been received from members of the difficulty they experience in consulting United States Government publications, in finding, quickly, what has been published, and in

obtaining copies of anything required without trouble and delay. Correspondence and consultation with various authorities was undertaken on this question and, finally, the Council decided to address a letter on the subject to the United States Ambassador. They are informed that their representations have been forwarded to Washington, and there, at the moment, the matter rests.

The Study of Education.

The New Education Fellowship has published a useful handbook for students, "An Introduction to the Study of Education in England and Wales". Part II of the handbook consists of a list, with certain particulars, of educational libraries in London. The material for this was collected and supplied by ASLIB.

Institut International de Bibliographie.

The Tenth Conference of the I.I.B. was held this year at the Hague from August 25th to August 29th. A programme of the Conference and an invitation to attend it was issued to all members of the Association, several of whom took part.

ASLIB and L.A. Joint Meeting.

For some years it has been the custom for ASLIB to co-operate with the London and Home Counties Branch of the Library Association in the arrangement of a winter meeting. This year the joint meeting was held on March 25th, when Mr. A. R. Stock, Librarian of the Institution of Mechanical Engineers, presented a paper on "George Stephenson's Institute and its Library". The meeting was held at the Institution of Mechanical Engineers, and Brigadier-General Magnus Mowat took the chair.

The foregoing brief record of the year's work is not exhaustive. A great many other matters, germane to its objects, with which the Association has been concerned could be mentioned and several proposals for specific activities which are under consideration, but which have advanced scarcely far enough to justify a report. It is hoped that members will consider that, having regard for the limited resources of the Association, the record is one of commendable and valuable activity.

The Council wishes to express its great satisfaction in securing Mr. Tizard's consent to continue as president for the forthcoming year, and their gratitude for the practical and active interest he has taken in the Association's work. His assistance has been sought on a number of occasions, and in giving it and in using his influence on behalf of the Association he has gone far beyond what is usually demanded of a president.

R. S. Hutton,
Chairman of Council.

S. S. Bullock,
General Secretary.

How the Manufacturer can help the Librarian.

By ERIC N. SIMONS.

I am tempted to wonder at times whether there is not too much "rare" in the word "librarian." Some of the collections of books and sources of information in our modern civic and special libraries are magnificent in the sense that they include many elaborate and costly volumes, many abstruse and heavily-subsidised periodicals, and many copies of the proceedings (not always in a forward direction) of learned and mysterious bodies. The student in search of knowledge on a particular subject will find vast amounts of it. But there is a danger, and I think a real danger, not in the quantity of information available, but in the abstruse quality of it.

To give a concrete example, I required, not long ago, some notes on the history and specialised uses of a particular tool. I found in the two principal libraries to which I have regular access—both excellent of their kind—a great fund of information that was of no use to me whatever, information of an entirely academic type, consisting of elaborate theoretical discussions concerning the mathematical formulæ requisite to prove that the stresses in a tool of the kind discussed were such and not such. I found a further great amount of information regarding the makers of such tools, their addresses and names. I found some odd items of no immediate importance relating to the total production of these tools in various parts of the world for a year that had been gone at least a decade. But only in one place did I find what I was seeking. That place was the pages of a tool manufacturer's catalogue.

Now the entire purpose of this paper is to suggest, with all deference, that the special librarian may be so eager to acquire and catalogue the highly academic, rare, and theoretical works on particular subjects, the stiffer treatises and transactions and proceedings, the elaborate lucubrations of experts—to risk a redundancy—that he overlooks one source of information whose value is by no means small. It is a common source, and there is nothing expensive or difficult in making use of it. Yet I venture to wonder how many of those whose eyes fall upon these words *are* making the greatest possible use of it. That source, in short, is the manufacturer.

In what I have said hitherto there is neither expressed nor implied any criticism of librarians or their collections. My aim is merely to point out the importance of the modern trend towards openness in the leading industrial works, and to indicate how the librarian can usefully take advantage of this change of attitude.

Fifty years ago, and even more recently in many instances, the private manufacturer regarded reticence about what went on in his works as a cardinal point in the conduct of his business. Nothing will illustrate this attitude better, though the example chosen is of an earlier period, than the story of Benjamin Huntsman. Huntsman invented a new kind of steel for making tools, a steel better than had ever been made before. He kept his discovery so secret that

his workmen had all to swear to reveal nothing of what they did or saw. One stormy night, however, a ragged, miserable-looking tramp knocked at the door of Huntsman's works, and asked to be allowed to shelter and dry his sodden rags in the warmth of the furnaces. The workmen took pity on him, and allowed him to curl up near them and go to sleep. But the tramp was a competitor, and he carried Huntsman's secret away with him next day.

This story is sometimes said to be legendary, but the fact that it has been handed down for generations without comment illustrates sufficiently that the general principle of secrecy in manufacture was not regarded as in any way sensational.

To come to more recent times, when Robert Mushet discovered self-hardening steel, he was advised by one who was, until but a year or so ago, chairman of one of the largest modern steel works, not to patent his invention. That, it was suggested, would be the quickest way of telling everyone "how it was done." The invention was consequently kept secret for many years. Within my own memory, permission for a visit to be paid to a steel works of any size in Sheffield was not always easily obtained, and it was commonly hinted that visitors were only shown what the management wanted them to see. Every factory was said to have a visitors' route, and, as well, a secret part of the works where nobody was allowed to go, and where everything that mattered was done.

It seems to me that this general love of secrecy by the manufacturer has been in part responsible for the failure of librarians to take much account of the literature published by manufacturers about their own products ; for an examination of the kind of stuff that manufacturers wrote about their goods thirty or forty years ago (and that some of them still write) does not reveal anything likely to be of value or interest to those who frequent a library for information. I can well understand that a librarian would come, as a result of examining these productions, to regard the manufacturer as the last and unlikeliest of all sources of accurate information concerning a product or a process. One has to see some of these old catalogue pages to believe them. Crude blocks, cruder typography, and the crudest possible text, interlarded with portraits of the highly-hirsute directors, and distinctly artificial illustrations of the works—invariably depicted as standing alone in the midst of cornfields, though their actual situation might be in the heart of a densely-populated industrial district—were features of them all. Nothing of consequence was said about the product. The pages told you the opinion of the firm about itself and its goods, and little more. It is not, therefore, to be wondered at that librarians ignored these things.

But some time towards the end of the last century a notable change began to take place, and it is only fair to apportion a good deal of the credit for this to the Americans. It began to be said in the United States that, after all, the business of an American manufacturer was to help make American industry the best and most efficient in the world. It was further said, by bold and pugnacious spirits, that so long as each manufacturer paddled his own canoe jealously, and hoarded up tiny scraps of information, the pace of American industrial progress would be some degrees slower than that of the snail. And finally, it was declared, with continually increasing conviction, that if

American manufacturers were going to make the world sit up and take notice, they must get together, pool their information, create a fund of scientific, technical, and practical knowledge on which each could draw, and so quicken the pace of their progress enormously. The jealously-hoarded scrap of knowledge must be tossed on to the common heap. The American manufacturer must put America first, and in so doing would find he was benefiting far more than by putting himself first.

So you began to get, trickling across the Atlantic, a number of extraordinary catalogues and publications and data sheets, in which information was regarded not as something that must at any cost be kept from the user, but as something that the user had a right to know, ought to know, and would benefit by knowing. You began to get, also, those conventions and chapters and meetings of technical experts attached to private firms that have made America famous. At these meetings men got up (and still get up as anyone can see for himself who reads such a publication as the Transactions of the American Society for Steel Treating), put before their business rivals all the practical problems they had been unable to solve, and received suggestions for their solution. But, in addition to putting their problems, they put their discoveries. Those who took also gave.

And this led gradually to the discovery that information was not something that would do the customer harm, but something that would do both him and the manufacturer good. It was perceived, as commodities, and particularly technical commodities, became increasingly complex and difficult of use, that the foe of the good manufacturer was not the man who knew a lot about the product, but the ignorant man who did not know how to use it properly, and failed to get good results from it. The American manufacturer began, therefore, to act on the assumption that a satisfied customer was one who got the best possible result from his product. To get this result a man must know :

(1) The principles of a product's manufacture and use ;

(2) The best way to make use of it ; and

(3) The dangers to avoid.

The desire of the American manufacturer was generally to quicken the interest of the buyer in the thing bought, so as to turn him from an unintelligent and careless into an intelligent and careful user.

The movement in the direction of imparting technical information to the user of a commodity spread but slowly to this country. There was an age-old tradition of secrecy to be eliminated before manufacturers could free themselves from the conventions (one might almost write superstitions) of their predecessors. The British manufacturer hesitated to put all he knew into his booklets and catalogues, not because he was afraid of the user, but because he was afraid of his rival. He was afraid that if he told the user how to treat a product so as to get the best results, information he was enabled to give because he had spent money on experiments, or because he had had long experience, his rival would get hold of the information, and without having incurred equal expenditure, would be made free of his work, and would be able to pass it off as his own.

I will not detail the considerations that caused the better British

manufacturers gradually to abandon that point of view. (The war, to quote but one example, had a tremendous quickening effect on all phases of industrial life.) It is the results of its abandonment that matter here. And from the librarian's point of view the results are of exceptional importance.

Before I go on to discuss these results in detail, it will be well for the librarian to understand clearly what the current attitude of the modern British manufacturer is in regard to the dissemination of such data as lie in his possession. I am not going to pretend for a moment that there are no industrial or metallurgical secrets left. That would be untrue. What I do assert is that the number of those secrets is vastly smaller than it used to be, and that those secrets are genuine secrets, by which I mean discoveries and inventions representing the work of highly-paid and highly-talented brains after long concentration on specialised problems. These secrets it would be, in the economically maladjusted world of to-day, commercial folly (though doubtless of great scientific interest) to divulge. But the close cherishing of miserable little details of manipulation or composition has gone for good. Analytical laboratory work is of so skilled and comprehensive a character to-day that few details of that sort could long evade the eye determined to discover them. Modern production work is so standardised and systematised that no method of manipulation could long escape intelligent and eager inquiry. Every industry or works of any size or consequence has its own research laboratories and designing staff, so that it need not rely on the activities of its rivals for its knowledge. If it did so, it would soon be in the rear. The only firms that poach, if the term may be used, on the work of their competitors are the small fry, and their competition is not such as need frighten or greatly concern large modern industrial organisations.

The attitude of the modern industrialist is, therefore, one of great educational importance. He is marketing and manufacturing goods that tend to become ever more specialised and complex, goods (whether machinery or metals or materials) that demand an ever higher degree of skill and intelligence on the part of the purchaser, goods whose cost becomes increasingly difficult to recover unless the user knows how to get from them every ounce of practical advantage that they will yield. Let high-speed steel be taken as an example. The modern super-high-speed steels cost something like 5s. 6d. a pound in the bar form. In simple manufactured tool form the cost becomes nearly double. If the user does not thoroughly understand how to heat-treat these steels when making them up into tools, he will get breakage upon breakage, or tools that will not cut when he puts them to work. His tendency will be to blame the manufacturer of the steel, and to accuse the steel of being bad; furthermore, it is extremely difficult and often inexpedient for the maker to prove to the user that the user himself is at fault. The manufacturer must, therefore, try to cut out these troubles at the outset by teaching him how to handle the steel properly. So, in the handbook on high-speed steels published by Edgar Allen and Co., Ltd., you get page after page of a strictly technical and practical character, illustrated by chart and table and diagram, teaching the user how to treat the steel correctly. I stress this word "teaching," because fundamentally

that is what the modern technical manufacturer is doing all the time in his catalogues and handbooks.

The British manufacturer perceives that he needs intelligent users just as he needs intelligent producers, and it is his business to train the one as much as the other. Hence an increasing output of technical literature from our large modern works, literature that I do not hesitate to claim contains information of direct practical, scientific, and technical value, information that will often be found in no other publications. I claim also that the data that many, if not most, of these works' publications carry are of direct value and importance to the student, the technical man, the engineer, the chemist, the draughtsman, and even the research worker and scientist. The librarians here assembled know without being told how large a proportion of their readers is contained in these classes, and how essential it is that so important a source of information should not be overlooked.

The essence of this paper is the suggestion that librarians are not sufficiently aware of this source's existence, and therefore do not take the advantage of it that they should. For example, my own firm, Messrs. Edgar Allen and Co., Ltd., of Sheffield, publish every month, for the direct benefit of their customers, actual and potential, a technical journal, "The Edgar Allen News," and when I say a technical journal I do not mean a collection of comic cuts and cheap chatter. It consists of twenty pages, of quarto size, packed with valuable articles of metallurgical, mechanical, and historical interest. The specimen copy I shall have with me during the discussion of this paper will probably be taken from the tenth volume. Now during the twelve years that this journal has been appearing, how many librarians have applied to be added to the regular free mailing list for it? If there have been thirty, I am sadly out in my calculations. Thirty libraries out of all the number that exist in this exciting universe! And yet every month over seventeen thousand copies of this journal go out to the ends of the earth, to lonely engineers in remote Australian quarries, to eager students in the Main Streets of the middle west of America, to high-browed experts in enormous British factories, to chemists and mining engineers and railway designers and merchants, to planters and gold mines and cement works and docks. Turning up a random copy, I find in it articles on the following subjects, articles written by experts, not by journalists eager for guineas:

Modern Cutting Tools for Machine Tools.
Notes on Pulverising Cylinders.
The Economic Utilisation of Compressed Air in Steel Foundry Practice.
A New Machine.
Early Tramway Men.
Cobalt-steel Tipped Tools.
Stainless Steel for Valves.
Relation between Temperature and Tensile Strength.

Am I not entitled to suggest that librarians ought not to overlook it?

I will give you another example, from the same source: a 62-page cloth-bound book, called "Drill Data." Here you have what is,

in effect, a text-book, and the only one of its kind that I have been able to trace, on the use, care, and treatment of twist drills, tools indispensable in the modern machine shop, tools concerning whose use and characteristics hundreds and thousands of students would like more information than they can find in any engineering text-book. For, remember, the manufacturer's publications are not bound by considerations of profit per volume. The manufacturer can produce a new and up-to-date edition of his text-books and hand-books as soon as he has exhausted his stocks of the old. He can never afford to be without his catalogues and booklets, and likewise he can never afford to publish out-of-date or wrong information. You have in his literature, therefore, the most trustworthy data on the subjects dealt with that can be obtained. Everything else dates. But put the library in touch with the manufacturer, ensure that the manufacturer possesses your name on his mailing list, and a steady stream of up-to-date special information flows automatically into your building and on to your shelves.

How important this matter is I can, perhaps, convey in another way by referring to the new text-books and publications of the professional publishing houses. It falls to my lot to review many of these, or to get them competently reviewed. And one fact that emerges continually from these reviewings is the impossibility for the professional work to keep pace with industrial progress. Here is a fine book on stainless steels—but open it to find some reference to the four qualities of malleable stainless steels that have been developed in the laboratories of Sheffield recently, and you draw blank. Since the author passed the proofs for press, metallurgy has moved on. But turn to the latest privately-published hand-books of Messrs. Thomas Firth and Sons, Ltd., or of my own firm, for that matter, and you come at once to the requisite information. Next year a revised edition of the text-book on stainless steels may refer to the four new qualities. But by then, Firth's and Edgar Allen's hand-books will perhaps describe four more. In brief, the privately-produced book or catalogue is always ahead of the professionally-produced, and it is often more comprehensive, for, after all, the publishers of these private catalogues and hand-books are not theorists. They are men face to face with practical problems, steeped in their subject, alive to all its possibilities. In fact, it is no secret that chapter upon chapter of the professional text-books is supplied or written by manufacturers of the products dealt with in their pages. And it is likewise no secret that the text-book is generalised, whereas the private booklet or pamphlet is specialised and often vastly more serviceable.

Now it might be imagined from what I have so far said that the steel industry of Sheffield, from which my examples have thus far been chosen, happens by a mere fluke to be producing to-day publicity material of this specialised and valuable character, that this material is exceptional of its kind, and that it no more represents the modern manufacturer's publicity than this city of Oxford represents the whole of England. Well, it is certainly true that some of the most efficient and valuable technical hand-books in existence are being published in Sheffield. But to prove that this diffusion of technical and useful information is not merely a local phenomenon, I turn to a recent publication from the works of Messrs. Mather and Platt, Ltd., of

Manchester. It is a pamphlet on boiler feed pumps. Opening it, one finds notes on :

General Layout of Power Station.
Economics of Boiler Feeding.
Feed Pump Characteristics and Factors determining the suitability or otherwise of a Centrifugal Pump for Boiler Feeding.
Parallel Operation of Feed Pumps.
Difficulty in Starting Up.
Surging.
Pressure Characteristics of a Boiler Feed System.
Variable Speed Electric Feed Pumps.
Arrangement and Layout of Feed Pumps—Importance of Correct Suction Conditions.
Feed Water Temperature.
Heat Generated by Feed Pump.
Size of Units.
Parallel Operation of Steam and Electric Feed Pumps.
Influence of High Pressures and Temperatures on Design of Feed Pumps.
Heater Drain Pumps.
Condensate Extraction Pumps.
Circulating Pumps.
Lubricating Oil Service Pumps.

And on every other page is a really valuable chart, many of which charts, I am told, have been of exceptional value to boiler engineers, being found nowhere else. Nor is this an isolated instance. I need only refer to the excellent technical journal issued by Metropolitan Vickers Electrical Co., Ltd., to the splendid little hand-books on certain electrical instruments issued by Evershed and Vignoles, Ltd. ; to the " Machine Tool Review " of Messrs. Alfred Herbert, Ltd., of Coventry—practically a professional journal ; and to the " Demag News," another technical journal, but issued in English by a German firm. I could mention dozens of others, but space will not allow of it, and it is unnecessary.

To show how seriously modern manufacturers take this business of educating users, I will add one other fact, which is that in addition to " The Edgar Allen News," a monthly journal in English, which has a circulation far greater than that of most English technical journals of a professional character, my firm publishes a Continental quarterly edition of the same journal in French, German, and Spanish —a feat that I have some satisfaction in declaring to be unique on the part of a private manufacturer.

I will not say that nowhere in these private text-books and journals will you find a reference to the goods and services of the manufacturer. Obviously, behind the direct intention to educate the customer lies the equally direct intention to increase the firm's business. But it is in the manner of carrying out this latter intention that the difference between ancient and modern catalogues is most marked. The modern manufacturer will tell you everything you ought to know about high-speed steel, for instance, and you will find his information of value whether you use his high-speed steels or not. The old-fashioned catalogues never did that. But he will also tell you,

as an adjunct to the standard information, everything you ought to know about the special group of high-speed steels made by himself. And what he tells you about these steels of his is not mere "fluff" or "puff," but good sound stuff that, if you do use or mean to use his steels,will be genuinely useful to you. It is in the same spirit that Mather and Platt, Ltd., describe their own particular pumps in the boiler feed pump pamphlet. It is in the same spirit that my friend Rowlinson, of the United Steel Companies, Ltd., tells about Fox's mining drill steel in his pamphlet on that subject, and that my friend Stanley Dickson, of Thomas Firth's, tells about Staybrite in his firm's book on stainless steels.

You will often see, in fact, articles in the engineering journals on "Types of Machinery for Mining" or "Types of Alloy Steels for the Aeroplane Industry." In seven instances out of ten these articles consist entirely of material cribbed from different manufacturers' catalogues, and the articles are printed and paid for gladly by editors, because they are seen to be authentic and sound. It would be something of an eye-opener to these editors if they sat in the publicity department of a large manufacturer's office, and received requests for catalogues and information from journalists eager to write articles for engineering papers.

Hitherto I have concentrated attention on catalogues and pamphlets, rightly, I think, because of their exceptional interest and importance. But I would also mention that the educational policy of the modern manufacturer is not confined solely to his brochures and private publications. It is extended to his advertisements. Scarcely an advertisement from a firm of up-to-date organisation but includes in its text practical information about the product described.

I now turn to an obvious point that arises. How is the librarian, convinced of the advantages to be obtained from collecting these various private publications, to get hold of them, and to get hold of them continuously? How is he to know what firms publish them, and when? Of course, the commercial and technical departments of many of the larger city libraries have long ago solved these problems. My own city of Sheffield and my native city of Birmingham are both very active and assiduous in this respect. Their methods are very simple. In the first place, they keep an eye upon the advertisements in the various technical journals. Most firms that publish valuable hand-books advertise them in their announcements, or at least refer to them. The majority include a coupon or request form as part of the advertisement, the coupon making it simple and easy for the reader to send up for the catalogue. The librarian should make a point of filling in these coupons, and collecting the various publications received as a result. He should then examine them carefully, and decide which firms are genuinely publishing material of the sort he wishes to collect. Having made this decision, he should write to the chosen firms, asking them to send him regularly their published literature. The majority will make no bones about this at all, but will gladly respond. But there is an important point to mention here.

In my own department I have cards made out for every library that applies for regular receipt of literature published by Edgar Allen's, and as soon as a new edition of an existing catalogue or a completely new catalogue is received from the printer, those cards are taken out,

and my despatching department posts by their aid a copy to every library. In this way the librarians are automatically kept up-to-date. But, though it may sound conceited to say so, I must suggest that not every firm will be found systematic in this way. The librarian will probably receive the catalogue he asks for, and then a long, long silence will follow, during which that catalogue steadily grows out-of-date. Out-of-date material, in the technical world particularly, is not only useless, it is definitely dangerous. Imagine the Patent Office Library, for example, a model of assiduity in keeping its information up-to-date—the red-hot haste with which they apply for a new edition or a new catalogue almost before your staff have had time to unpack the parcels from the printer is a constant source of wonder and admiration to me—doing the excellent work it does if all its material were five years old. Out-of-date technical information can distinctly mislead readers.

I suggest, therefore, to librarians that they should make up for lack of system on the part of the manufacturer by an exemplary system in their own offices. Let them keep an Argus-like watch upon the announcements of manufacturers, and never hesitate to badger for the literature they want. In this way, and in this way alone, will they keep their shelves clear of obsolete publications. It is as necessary, I might add, to get hold of a new edition as of a new catalogue. And manufacturers' publications have this one great quality, that when new editions come out you are generally safe in destroying the previous one.

Speaking on behalf of Edgar Allen and Co., Ltd., I think I may safely say that we shall be delighted to add to our regular free mailing list the name of any library which believes a collection, steadily maintained up-to-date, of our literature and catalogues would be of value and help to its readers and subscribers. This is not pure benevolence on our part, however much it may seem so. We recognise that the student of to-day is the customer of to-morrow, and as we believe that our works and our products will be as highly esteemed and as necessary in fifty years' time as they are to-day, we can afford to take, and delight in taking, a long and intelligent view.

DISCUSSION.

This and the following paper by Mr. Headicar were discussed together. See page 35.

Contd. from p. 12]

These questions were of increasing importance for the universities, which had in this country largely stood aloof from professional training, but were now making up lost ground. The guiding principle seemed to be that if the preparation for any profession required the study of some fundamental field of human knowledge up to a certain standard it should be provided by the universities, and if this condition were fulfilled there was no good reason why they should not also provide for the necessary practice in the application of the fundamental knowledge. The training for any profession not requiring the study of some basic field of knowledge might well be left to other agencies. It was essential, however, if the universities were to play their full part in professional education that they should have what amounted to licensing powers, such as they possessed already for medicine and dentistry.

Practical Methods of Arrangement, Indexing, and Routine in the Business Library and Information Bureau.

By B. M. HEADICAR.

In my researches into the methods employed in the business library and research bureau I have been much impressed and rather disappointed at the lack of uniformity and standardisation evident. The object of this paper is to lay down some simple rules of practice which can be easily adopted in large or small concerns and which are based on principles which have produced the most satisfactory results both here and in America. It is assumed that the business man or researcher in industry wants information at the moment of asking; information which must be up to date, full and accurate as possible, which can be produced by the librarian or rooted out by the enquirer himself. All this requires a system which is simple, efficient, and economical, giving what is required without elaborate cataloguing arrangements or over-detailed classification. Obviously such a system demands that the person in charge should be someone versed in the arts of practical librarianship. It is certain that no firm would think of appointing a book-keeper or typist without practical experience of his work, and yet one often hears of a clerk who has not been a conspicuous success being, for that reason, put in charge of a business library. I make no reflection on any individuals in particular, but I have been appalled at some of the so-called "systems" and practical methods in vogue at some of the establishments I have visited. When we are as insistent in this country as they are in the United States about the necessity of qualifications in the special librarian there will be less ground for the complaint one sometimes hears that the library has not justified the expenditure on it.

Books, as generally understood, are usually few in number in the special business library and will consist largely of reference works in the real sense—directories, dictionaries, code books, year-books, statistical annuals, etc. Books should be classified according to one of the accepted schemes—Decimal or Congress. I am not a believer in using some specially invented scheme, of which there are quite a few. None of these is capable of doing anything which cannot be done by one of the universal schemes, and uniformity of practice will never be possible while firms allow themselves to be persuaded that by having some arrangement differing from that used anywhere else they are going to get better results.

No accession register is really necessary in the business library. Stamp the back of the title-page of each book with the name of the firm or department. Use a round stamp. Square or oblong stamps can rarely be kept straight, but a round one never looks out of alignment. Put the classification number within the stamping and carry this number, for shelf arrangement, to a label (Denison's star tags are preferable) on the face of the cover. Remember that gummed labels will adhere firmly if they are damped *both* sides before being

placed on the books. Catalogue each book under its author and subject or subjects. Catalogue cards should be of the usual 5in. by 3in. size and an alphabetical arrangement under authors and subjects will be found the most convenient in practice and be most easily understood by the newest recruit to the establishment. In regard to year-books and statistical annuals make a note of the approximate date of publication. This varies considerably from year to year in some cases, but if enquiry is made for the new volume a year from the date of the publication of the last, it should ensure that the new work will be obtained as soon as possible. Nothing is more fatal to the credit of the library for it to be without the latest edition of an annual required at a critical moment.

Periodicals are usually more important than books in the business library, for in them only is the latest information and research to be found. Large numbers are taken in many firms, but to those with a substantial advertising campaign the cost of periodicals need not be tremendous, as voucher copies are usually received gratis. In any case it is essential that regular and prompt supply should be assured. Every periodical should be registered on a recognised periodical card, such as the samples I submit. On the backs of the cards note carefully the source of all periodicals paid for, so that any irregularity in the supply can be taken up immediately. In those cases where annual subscriptions are paid make a red line on the card preceding the month when the subscription expires, and in the case of a publication from abroad three months ahead, so that action may be taken for the renewal of the subscription in good time. Many publishers are very strict in refusing to send any issue not paid for, and it is a disaster to have to report that a current issue is not available because the account was not paid in time. Keep a day to day register for each day of the week, noting under each the periodicals which are due on that day. This register should be most carefully checked, so that any non-arrivals may be instantly enquired about. There is no excuse for any librarian whose service fails because of his own faulty organisation. In regard to monthly, etc., publications, carefully note the usual date of issue, register accordingly, and check daily. Keep in close touch with your local municipal library so that unnecessary duplication in the purchase of periodicals may be avoided. On its arrival check off each periodical and place library stamp on front cover. On each card note the names of the persons to whom a periodical has to be "routed." The most efficient method of "routing" is for the librarian to make himself responsible for delivery and collection in each case, thus ensuring accuracy and regular passing-on. It is a mistake to leave it to the individuals on the list to supply and collect from each other. Brown swears he has passed on the journal to Smith, the latter swears even more strongly he has never had it, and, two days later, Brown finds it under a pile of letters on his table. There should be a notice in each periodical "routed" asking readers to notify any article which should be indexed or abstracted. On the return of the periodical to the library the indexing, etc., should be carried out. In the case of journals permanently filed the articles should be entered in the subject catalogue. In other cases the articles in question should be clipped from the periodical, the name and date of the periodical being entered on

the clipping. Any cutting without these essential particulars loses its value. The subject of the article should also be written on the clipping and the latter placed in its proper folder in the vertical file, of which more later.

Periodicals to be retained permanently should be bound when a volume is complete. Buckram is by far the most suitable material for binding these in. It is not liable to injury by atmospheric conditions, it is very durable, it is inexpensive. If the advertisement pages are not really essential to the business, have these removed by the binder. The consequent saving of shelf space and cost of binding will be very considerable. See that each volume contains its title page and index, and if there *is* a quiet period in the year, arrange to have the binding done altogether then, so that the minimum of inconvenience is caused during the absence of the journals. Do not throw away any periodicals before asking the municipal librarian if he has any need of them. The business library has not usually a lot of shelf room to spare, and in course of time the periodicals will begin to cause congestion. Many public libraries would be glad to find room for the earlier volumes of these periodicals, and it is often possible to hand them over as a deposit collection, where it is not desired to make an out-and-out gift of such volumes. Remember also that most of the important scientific journals published may be obtained on loan from the Science Library, and this fact may make considerable modifications of the purchase and binding accounts possible.

Clippings and pamphlets form a vital feature in the information bureau, and unless these are systematically treated and arranged nothing but chaos will result. Pamphlets and leaflets do not require classification according to any schedule. They should have the name of the subject dealt with written on the top left hand corner, and should then be placed in a folder bearing the same subject heading in the vertical file. Clippings should each have the name of the journal from which they have been cut written on them, with the date of the particular issue, and also the subject headings with which they deal. If this appears *exactly* in the title of the article it may be underlined to save writing. Clippings to be kept for any length of time should be mounted on U-fil-um strips; these latter being in turn mounted in a manila folder somewhat smaller than the subject folders in the vertical file, into which the smaller folders are put, after the subject heading has been written on the outside.

Samples of these strips are submitted with this paper, and I can explain them more fully during the conference. Where there are large collections of cuttings on one subject, they are best kept in a large cartridge paper envelope and filed behind the subject folder in the vertical file.

In order to avoid using synonymous terms in the subject headings, use should be made of the Library of Congress alphabetical list of subject headings, or the headings used in one of the published indexes to periodical literature, such as the Engineering Index. You may have one item on "Workmen's compensation" and another on "Employers' liability". The subject is the same in each case, and both require filing in the same folder. You may even find it better to make your own list, especially if you are concerned with minute details of some division of a subject. In any event, be sure that the

heading you choose has the same meaning as that usually understood in your business. Use the most specific heading. Do not put a work on "Steam engines" under "Engines". It is not a book on *all* kinds of engines, but a special kind only. A pamphlet on "Electric bells" should not be entered under "Bells", which is the heading for works dealing with bells of every description. Don't put information dealing with "railways" and that dealing with "convicts" under the same heading "Transportation".

Give references from all main headings to their sub-divisions: "Bells". *See also* "Electric bells". "Engines". *See also* "Steam engines". Refer from the *greater* to the *lesser* and not from the *lesser* to the *greater*. The use of one of the guides I have just mentioned will prevent you from making serious errors in this connection at any rate.

The vertical file is a collection of manila folders and guides, kept upright in a series of drawers or cabinets, and arranged in strict alphabetical order of the subject headings as written on the projecting edge of the folder. The pamphlets and clippings dealing with the subject are dropped into the folder, each item previously having the subject heading written upon it. There is no need to attempt any particular order within the folders themselves. The legal size vertical file is the most useful. Each drawer measures 10½in. high, 15¼in. wide, and 24in. deep (inside measurements). Steel cabinets are recommended where the æsthetic atmosphere is not predominant. They are usually cheaper than wood, and take up less room (wood is much thicker of course). This is an important consideration where there is a large number of these cabinets and where floor space is limited. Roughly, half an inch in space is saved on each cabinet as compared with those made of wood. The manila folders are 14in. by 9in., with expansion of 1in., and the front edge half an inch shorter than the back, on which the subject heading is written. It will readily be observed that to attempt to classify and catalogue each item in the vertical file would be an enormous task, rendered all the more formidable when it is remembered that constant weeding out of this material is required as it becomes substituted by later information. The alphabetical catalogue would contain simply one reference from a subject to the vertical file, however many pieces of information on the subject were contained therein. For instance, "Accumulators". *See also* "V.F." would cover any number of pamphlets and clippings, and no alteration in the catalogue is required when material is discarded. Systematic discarding is required of this material. Keep no information in duplicate. Never discard any information not adequately replaced if it is not obsolete. On the other hand, never keep any information which has not been replaced if you know it to be of no real value. Inaccurate or out-of-date statistics are worse than none at all.

Special catalogues of maps, slides, photographs, etc., may be required, but I am dealing with the kind of material to be found in *all* business libraries and information bureaux. These other matters would require a paper to themselves. Suffice it to say that the use of catalogue cards of different colours would immediately suggest the particular collection and enable one catalogue to cover the whole of the library material, especially when these special sections are not large.

An important consideration is the use of paper slips instead of cards in the catalogue. Where use is not excessive they are quite suitable, cost about 1s. 3d. per 1,000 as against 6s. for a good card, and, being so much thinner than cards, require much less cabinet accommodation, this again economising in cost and floor space. Whatever kind of a room you are housed in, place your catalogues and vertical files nearest the lighting, your consultation and office tables next. Your shelving can be given the darkest part of the room, should there, as usual, be such. A table 6ft. by 3ft. is usually large enough for reading purposes, but of course it depends on the size of the establishment and the use made of the department. Four people, two each side, can read comfortably at the table specified. A good steel shelving will be found cheapest and most economical in space. The "Steeletta" brand which we use largely at the London School of Economics is the most convenient and economical I have met with. A standard bay 7ft. 6in. by 3ft. by 8in. can be bought for less than £3. It is portable, adjustable, and has no sharp edges.

A department based on the above principles, with a trained librarian at the head, who will appreciate in advance the needs of his clients and have information at hand before it is demanded, must undoubtedly be an immense asset to any business. Unfortunately, as it is not a direct revenue producing department, and as you cannot make a table in £ s. d. of the profits it indirectly makes for the firm, industry is, in that typically English fashion, slow in realising its possibilities.

I have no doubt many readers will think this paper very elementary, and tell me that they know all about everything mentioned in it. It is written with a desire to help those who are not so fortunate and who have to face the problems contemplated herein. It will, I hope, be used as a guide for those who may in future be called upon to organise a library and information service. If so, and if it also leads to a certain uniformity of practice, its purpose will have been achieved.

DISCUSSION.

This and the preceding paper by Mr. Simons were discussed together. Mr. R. Brightman said that not only had American manufacturers introduced the new type of catalogue referred to by Mr. Simons but they were making much more use of them. It was difficult to get to know of their existence. Much depended on co-operation of the technical service with the librarian without whose aid in indexing and abstracting the information in the publications they could not be of full service. Dr. R. S. Hutton, Mr. A. W. Swan, Mr. P. C. Bursill, Mr. B. M. Headicar, Miss A. K. Osborne, Sir Frederic Nathan, Mr. Donker Duyvis, Miss M. Gilbert, Professor B. Holman, Dr. E. A. Baker, Mr. J. H. Pafford, Miss E. W. Parker, and Mr. B. C. Curling also spoke.

International Abstracting and Indexing of Scientific and Technical Literature.

By SIR FREDERIC L. NATHAN.

It is estimated that between 13,000 and 14,000 books dealing with scientific and technical subjects are published each year, whilst possibly about three-quarters of a million scientific and technical papers are printed annually in some 15,000 current periodicals; these numbers are always increasing. This constant accession to the world's stock of knowledge in the field of science and technology makes it very difficult, if not practically impossible, under existing conditions, for scientists and technicians, professors and students, and other interested individuals to keep themselves adequately informed regarding new work and developments in existing fields as they occur.

Certain machinery having these objects in view is in existence in the various periodicals containing titles of books, of papers, of articles, etc., or abstracts of their contents. Some of these periodicals cover a fairly wide field, such, for instance, as *Science Abstracts* and, in the field of chemistry, the *British and American Chemical Abstracts*, the *Chemisches Zentralblatt* and *Chimie et Industrie;* whilst others deal only with their special subject, as, for example, the abstracts in the *Journal of the Institution of Petroleum Technologists.*

The five journals referred to above, which cover both pure and applied chemistry, physics, electricity, and engineering, are amongst the most important ones containing abstracts. Some idea of their extent may be gathered from the following figures:

Science Abstracts, 1930.

	Number.	*Pages.*
Physics	4,165	230
Electricity and Engineering	2,537	134
	6,702	362

British Chemical Abstracts, 1930.

(A) Pure Chemistry	11,543	1,628
(B) Applied Chemistry	10,674	1,170
	22,217	2,798

American Chemical Abstracts, 1929.

	46,949	7,654

Chimie et Industrie Abstracts, 1930.

	11,780	1,921

(These abstracts are indexed in accordance with the Universal Decimal Classification.)

Chemisches Zentralblatt Abstracts, 1930.

Estimate	45,000	8,000

A study of abstracts leads to the following general conclusions:

(1) The abstracting and indexing of scientific and technical literature is not really adequate from the international point of view, one reason being that the literature of the smaller countries, and of those countries whose language and printing characters are unfamiliar, is not sufficiently covered.
(2) On the other hand, there is overlapping in the case of the major countries which is wasteful in time and money.
(3) There is no uniformity in the character and arrangement of the abstracts in the various publications.
(4) The alphabetical indexes in different languages make it difficult to co-ordinate the abstracts on any given subject.
(5) There is often considerable lag between the appearance of the original and of the abstract.

It is obvious, therefore, and it is I think, generally admitted, that some action should be taken to systematise, on international lines, the abstracting and indexing of scientific and technical literature, and what follows is an attempt to outline a scheme with this object in view.

The principal features of the scheme are as follows:

(1) Each country to be responsible for dealing with its own literature.
(2) Abstract bulletins to be issued if possible at not longer than monthly intervals.
(3) The individual bulletins to cover a restricted range of allied subjects.
(4) The abstracts to be in English, French, German, or Italian.
(5) The arrangement of the information in the abstracts to be identical in all bulletins of all countries and to be that of the Institut International de Bibliographie. This arrangement is explained in detail further on.
(6) The bulletins to be printed on one side of the paper and prepared so that the individual abstracts can be cut out for mounting on 5in. by 3in. (12.5cm. by 7.5cm.) index cards.
(7) The abbreviated inscriptions of the "World List of Scientific Periodicals" to be used for the titles of publications.
(8) The abstracts to be indexed in accordance with the Universal Decimal Classification (U.D.C.). This classification is described and its advantages are summarised later.

A consideration of these features brings out the following advantages of the system built up in accordance with the scheme:

(1) As each country will confine itself to its own literature, not only will duplication be avoided, and therefore savings effected in both time and money, but a more thorough covering of its own literature should be secured, especially in the case of the smaller countries.
(2) The issue of bulletins at short intervals, and an earnest endeavour to include the very latest publications, will result in the most up-to-date information being made available.
(3) The multiplicity of bulletins will enable each individual subject being very fully covered.

(4) The restriction to four, of the languages of publication, will remove the language difficulty to a great extent, especially in the case of the middle and far eastern countries.

(5) Uniformity in the arrangement of the information contained in the abstracts will simplify reference.

(6) The *format* recommended for the bulletins will enable card indexes to be prepared from them very readily.

(7) The general use of the same abbreviated titles for periodicals will facilitate their identification.

(8) The general adoption of the universal decimal classification for indexing abstracts would make it possible to amalgamate into a single index all contributions to bibliography on any given subject, irrespective of source and language.

The following suggestions are put forward for the preparation of the abstracts themselves :

The abstracts of books, monographs, patents, general articles, reviews of progress, and similar matter should be descriptive, summarising the contents so that a clear indication is afforded of the scope and salient features. In the case of reports, papers, etc., dealing with investigations and researches, and with the nature and operation of plants and processes, the abstracts should be analytical and should indicate the purpose of the investigation or research, or the nature of the process, etc., the method of carrying out the investigation or research, or of working the plant or process, the results obtained and the conclusions arrived at. Data, figures, measurements, etc., should be given so far as is conveniently possible. In preparing abstracts it should be remembered that they will be used in other countries.

In order that the information contained in the abstract should be arranged in the same way, irrespective of where it is prepared, the arrangement should be that of the International Institute of Bibliography of Brussels, which is as follows :

U.D.C. Index Number in the right-hand top corner.

Name of Author on the left hand and on the line below the index number ; surname first, followed by Christian names or initials.

Bibliographical References :

(*a*) *Books.* The title, preceded by the date, on the line below and commencing slightly to the right of the author's name, followed by the place of publication, publisher, price, number of pages, illustrations, etc. See Sample A.

(*b*) *Periodicals.* The title of the article preceded by the date written as a decimal number, on the line below and commencing slightly to the right of the author's name. On the next line, and again commencing slightly to the right, the title of the periodical using the abbreviated inscription of the World List of Scientific Periodicals, followed by the year, volume number in Arabic numbers underlined, and the pages, first and last. See Sample B.

Abstract. To follow the bibliographical reference. In the case of abstract journals the abstracts are given running numbers.

SAMPLE A.

Mitchell, H V **662.75(02)**
1931. **Fuel Oils and their Application.**
London : Sir Isaac Pitman & Sons, Ltd. 5s. 170 pp.
[The author states that his aim in this book has been to outline the principles involved in the selection, examination and the use of fuel oils for various power and heating purposes. The oil resources of the world are catalogued, followed by a classification of the oils produced, including mineral spirits. There is a chapter on the examination of fuels and another on their calorific values in which the relative merits of the " higher " and the " lower " calorific value are discussed. The remainder of the volume is devoted to a description of oil firing apparatus. [298]

SAMPLE B.

Nielsen, Harald **662.81 : 662.749**
1931.06.03. **Carbonised Briquettes.**
Gas J. 1931. **194.** 613-614.
[To illustrate the possibilities of briquetting low temperature coke a table is given showing the comparative results of briquetting anthracite duff, semi-coke from non-caking coal, semi-coke from medium caking coal and semi-coke from Canadian lignite. Low-temperature pitch, horizontal retort pitch and vertical retort pitch are all equally suitable for briquetting purposes. [385]

Sets of national bulletins prepared on the above lines would constitute complete bibliographies of the subjects they deal with, if they are indexed on a uniform system of classification of universal application, whatever be the source of information, the language in which it is recorded, and the subject to which it pertains. Differences of language and difficulties inherent in any alphabetical classification make it unsuitable for international bibliographical purposes. The alternative is the use of symbols of an ordered notation, universally known and understood. Each symbol, according to its position in a group, should represent a subject, or a division or subdivision of a subject, the groups being extended as may be necessary to include the smallest subdivisions required. Arabic numbers in decimal order are the most appropriate symbols. They are the same all the world over, are independent of language, and the order of the classes arranged under them becomes the same in all countries. They have therefore been used in the Universal Decimal Classification, in which the first ten decimal divisions of unity itself, representing the whole of knowledge, represent ten great groups in which all subjects that can be made the object of an intellectual work may be classed. Each of these primary groups can be divided into ten further groups, of which each may represent more detailed division of the primary group, and by further subdivision it is evident that the representation of detail within any group can be carried out to any extent. Any subject of an intellectual work, therefore, once it has been assigned a decimal number, can be placed in a definite numerical position in a collection of bibliographical matter where it can be found at once, and at the same time it will be brought into juxtaposition with information related to allied subjects in co-ordinate classes and to the more general subject in the whole class of which the specific subject forms a subdivision. In addition, there is a highly-developed system of common subdivisions which may be applied to any divisions of the classification, or to large groups of divisions. The whole classification

is completed by an alphabetical index of subjects, with their corresponding decimal numbers, which is sufficient to enable the searcher for information on a given subject to locate the particular item he requires.

The first international bibliography compiled on these lines has been started by the World Power Conference as the result of recommendations made by the British National Committee to the International Executive Council at the Second Plenary World Power Conference held in Berlin in June, 1930, and unanimously approved by that body.

The Bulletin aims at providing selective and up-to-date abstracts of books, papers, articles, etc., on power and fuel, grouped under the following headings :

(*a*) Sources.
(*b*) Generation.
(*c*) Distribution.
(*d*) Utilisation.

The British Bulletin is published monthly on the 25th of each month ; the first number for January, 1931, was issued on the 25th February, 1931.

The Japanese Bulletin is published monthly in English ; the first number is dated February, 1931.

The German Bulletin is published quarterly ; the first number is dated May, 1931.

The United States of America, the Union of South Africa, Poland, and Czechoslovakia are preparing bulletins on similar lines.

DISCUSSION.

Mr. R. Brightman asked for further information regarding the extent to which it was proposed that each country, and particularly the smaller countries, should carry out their own abstracting. The immense disparity between the abstracting carried out by different countries made him doubtful of the wisdom of the proposal that each country should make abstracts of its own literature. The chemical abstracts prepared by the French journals could not be compared with those published by the Zentralblatt, British Chemical Abstracts, and Chemical Abstracts, and unless there was a generally satisfactory standard of merit in the national abstracts no scheme based on them would be of practical value. He also asked whether it was proposed that the abstracting country should furnish its own translations into the agreed languages, because it was much harder to find abstractors competent to translate into other languages. If the country receiving the abstract was required to make its own translation there was real risk of loss of accuracy in translating from an abstract and not from the original paper. He considered that it was important that fuller abstracts should be given of the less accessible papers, and this would not be so easily secured under the proposed scheme, since accessibility varied from country to country.

Mr. S. W. Gibson agreed as to the need and the general method suggested to meet it. The volume of work involved and the time element and consequent money difficulty were noted as real, but as difficulties to be faced and, if possible, met. Historical impossibilities of yesterday are commonplace to-day, and ASLIB is one of the pioneers to-day. He raised two points of detail : (*a*) Filing cards with abstracts pasted on, especially if they buckle, take so much extra room that it might be worth while considering the possibility of printing abstracts on paper sufficiently thick to be cut five-inch size and filed. (*b*) While considering a decimal classification it was his experience that in practice both a decimal classification and an alphabetical index are necessary. He asked what is the connection between the Dewey and the Universal Decimal Classification, also is the U.D.C. obtainable in English and, if not, when may it be expected ?

Sir Frederic Nathan, in reply to Mr. Brightman, pointed out that the essence of the scheme was that each country should deal with its own literature for the

[*Contd. on p.* 49

An Ever-Ready Printed Catalogue.

By DR. ALBERT PREDEEK.

I

Cataloguing and classifying have some similarity to the operations in the signal boxes of railway stations. Just as the latter regulate the traffic of the incoming and the outgoing trains, the catalogues must be the signposts to the huge mass of literature that comes streaming in and is to be kept in order. There is, however, a difference. In order to master the increasingly rapid traffic, the signal box equipment and the safety devices of the railway stations are being always brought up to the required grade of efficiency by new technical inventions and improvements. The catalogue, on the other hand, by virtue of its method and equipment, is less capable of extension and renovation. The appearance of new scientific fields, or an alteration in the opinion on scientific classification often places the libraries face to face with insoluble problems.

The reorganisation or the new equipment of obsolete catalogues is one of the most urgent problems of library administration. Unfortunately almost everywhere the means and powers were, and still are, lacking. The application of time, and work-saving mechanical appliances for the preparation of the catalogue material are, it is true, customary in all modern libraries, but those ingeniously constructed office appliance machines, which have been introduced in the commercial and economic life for some long time and which have there reorganised and rationalised whole branches of operations, are still, however, little known and used in libraries. It is the subject of this paper to point out the uses of machinery to produce the catalogue and keep it up to date.

In the progress of library economy it was a great step when, about 1825, the slip form of catalogues or the sheaf catalogues were started. But the very decisive turning point was the adoption of printed cards in the sixties of the nineteenth century, at first in U.S.A., and, since the seventies and eighties, in European libraries. To-day numerous libraries are supplied with printed cards by the great national libraries or bibliographical institutions of their countries. Printed cards allow the application of the "unit-card principle," a modern method of cataloguing which provides for the supply of various catalogues with a uniform material. But there are still some disadvantages: the printing is expensive, the edition limited. If the stock is exhausted and the type distributed, a reprint can be made only at great expense, and the libraries cannot always foresee their demand for cards or procure out-of-print material. In 1850, C. C. Jewett,* librarian at the Smithsonian Institution, was the first to make the proposal to stereotype the title setting and to use it for "accumulating"—*i.e.*, for the supplementing of catalogues. Before Mergenthaler's invention of the

* Charles Coffin Jewett, "A plan for stereotyping catalogues by separate titles . . ." Washington, 1851; and "On the construction of catalogues of libraries and their publication by means of separate stereotyped titles", *ib.* 1852; Second Edition, 1853.

line casting machine (Linotype), 1883, this process did not seem economical, but then the printing costs were greatly reduced. The method still suffers, however, from the drawback of the heavy and cumbersome leaden lines or setting blocks, or from the expensiveness of the lighter copper galvanos and has not been adopted, except in some very large libraries.

The ingenious idea of duplicating and renewing the catalogue by means of the stereotyped title can, however, be realised to-day in a technically simpler manner—*viz.*, by means of a printing device—which has arisen from the requirements of office work and has been developed to a high standard of perfection. That is the " Addressing Machine,"* an office machine, the fundamental idea of which is embossing short texts on small metal plates by means of a simple " embossing machine " and have these printed by running them through a printing machine, working at high speed. The addressing machine is an important appliance in rationalised office operations, as it can produce addresses, lists, inventories, accounts, and statements rapidly and reliably and repeat them according to the demand.

The addressing machine is sometimes placed amongst " duplicating machinery "† with regard to its functions in office operations, but the real task of it for library economy does in no way consist in " duplication," but in the fact that it can print the catalogue as a whole or in parts, at any time and, by its " selection devices " print selected parts from a great stock of titles chosen from various points of view. The well-arranged stock of metal plates represents itself an " ever printable or renewable catalogue " which is continuously kept up to date by the addition of the new plates. Run through the printing machine the result is a renewed catalogue, produced solely by mechanical operation and, to a certain extent, automatically.

II

This manifold machine—one of the products of the Adrema-Maschinenbaugesellschaft, Ltd., Berlin—was first used in the library of the Technical High School, Berlin, in 1929.‡ Other large European libraries since have adopted this method.§ The confines of this paper will not allow me to describe the details which were, step by step, investigated, tested, and applied in this library. It may be sufficient to refer to the diagrammatic representation of the organisation of the catalogue-department which demonstrates the kinds of catalogues now kept, and the places in the libraries where they are used.‖ From

* *Cf.* A. Predeek, Die Adrema Maschine als Organisationsmittel im Bibliotheksbetriebe. Berlin, Hirzel, 1930.

† At the Sixth Conference of ASLIB the types of duplicating machines used in England were dealt with in a paper by Albert Parker. It seems, therefore, not necessary to go into details of construction and working methods. See also my paper quoted above.

‡ At the First Conference of ASLIB, H. Rottenburg presented a paper dealing with the preparation of indexes to periodicals. His suggestions do not seem, however, to have been followed further.

§ As the methods described in the following, and the devices of the addressing machine only refer to the particular machine of this firm, " Adrema-printing " and " Adrema-method " will be spoken of in future, but it is not intended to convey that this is the only machine which serves these methods.

‖ Diagram shown at the Conference.

this diagram, it will be seen, I hope, that the different catalogues are supplied from one centre with the necessary title material.

Typographically regarded, printed cards, of course, are superior to the "Adrema print" which looks something like typewriting. But the Adrema, it is to be understood, does not pretend to compete with letterpress; its system has the advantage that the title plates themselves represent a sort of "permanent printing stock" of unlimited duration and uniform quality. Although the metal plates can be re-embossed and can be used many times over, it is advisable to keep this "Archive of plates" and supplement it by continuous additions. Hence the production of complete inventories or of accumulated lists issued from time to time, as well as the renewal of obsolete or the equipment with new catalogues are now less a question of staff, of the cost, and of the expenditure of time than the question of the—consumption of paper.

It is the practice of most libraries to prepare their various catalogues: inventories, shelf-registers, author, classified catalogue, subject index, etc., in various places and by independent cataloguers who are, for the most part, not organically connected with each other. Moreover the different catalogues have various rules. With the Adrema-method the preparation of the whole of the material for catalogue purposes is confined to one single place. This is at the biginning of the cataloguing work. Here the whole of the clerical or assistant work necessary for the preparation is centralised. Thus the work, which otherwise is duplicated, is finished once and for all. All the subsequent processes are avoided and the assistants are able to devote themselves more intensively to classifying work—*i.e.*, to an activity of a higher kind. Furthermore, the different types of catalogues are provided with uniform and extremely correct title material. Because they all receive their title cards at the same time, the handling of the books is accelerated, an increased reliability, simplification and interweaving of all functions are achieved and guaranteed.

The Adrema-system, therefore, means "rationalisation" of cataloguing methods and, by the application of the important principles of modern business management, it modernises library economy.

III

The full advantages of the Adrema-method, however, which make it superior to any other printing or duplicating process are shown by using its "selector devices." For, these make it possible to print from the stock of plates, the order of which is neither altered or disturbed, any desired parts separately. By this means the apparently immovable and rigid plate catalogue receives a great mobility and flexibility which the handwritten or printed, and even the card catalogues do not possess. The possibility of selection opens the way to the mechanical production of special catalogues and lists which, undoubtedly, meet a great need of libraries and their users. For it is no longer sufficient for a modern library to lead their readers only by way of the one chief catalogue to the required literature just as little as the modern express railway traffic could be dealt with on one single incoming line. The differentiation of science and the differentiation of the mental workers fundamentally demand that select catalogues should be provided as well as

the main catalogue so that new enquiries can be answered by new bibliographical compilations. Thus, information is revealed more effectively than would be possible by a single main catalogue.

The use of mechanical selection devices* depends upon the purposes in view and the extent of the material to be dealt with. If only a limited number of titles are to be printed from an extensive stock of plates, it will be more economical to take these plates from their trays by hand, to put them together in the desired order, print them, and replace them. A " selective print " can, furthermore, be obtained by running a certain supply of plates through the printing machine and operating the printing device " optically." This is easily done, if the machine runs slowly, but it demands the constant attention of the operator.

The all-mechanical selection can be done by two methods : by means of the " selection device " and with the aid of a special additional apparatus, the so-called " drum selector." The thirteen-part and also the thirty-part selection printing machine of the Adrema Co., by the adjustment of one or more of the " selector-buttons " prints only those plates which bear one or more of the marks, the so-called " signals," which are stamped on them by means of the embossing machine. Controlling the printing is done by an electric switch which can be so arranged that not only single signals but also combinations of signals can be set into activity. With the thirteen-part machine there are 300 different " signalisations " possible, with the thirty-part machine there are as many as 59,049 ! In the " drum selector process " a metal drum moves synchronimously with the progress of the plate through the printing machine. There is a number card stretched on the drum in which numbers from 1 to 3,000 can be punched by means of a punching machine which then are electrically " felt " and print the plates corresponding to these numbers, whilst all unpunched numbers run through the machine unprinted. The apparatus can also be operated in the " negative " sense in that the punched numbers remain unprinted and all others are printed. By the use of the drum selector the plates do not need to carry any marking, as the punched numbers correspond exactly to the plate numbers,

The mechanical selector process is closely connected with the sequence which the stock of plates has received. This can be ordered alphabetically, systematically, or according to accession-numbers. If the plates are arranged according to the latter, they are, at the same time, reproduced chronologically, so that certain periods—*e.g.*, a year's registers—can be printed automatically.

The alphabetical order of plates is, on the other hand, subject to continual changes of the sequence of the plate numbers. It is not suitable, therefore, for a selection by means of the drum selector which assumes an unchanged sequence. The plate catalogue arranged alphabetically, naturally has the advantage of giving, at any time, the total or partial stock, too, in alphabetical order. If it is desired to issue monthly or annual lists of accessions, cumulative catalogues, or indices, the alphabetical plate catalogue is suitable.

* *Cf.* A. Predeek, Die mechanische Herstellung und Auswertung des technisch-wissenschaftlichen Literatur-Nachweises. 's-Gravenhage, Nederlandsch Instituut voor Documentatie en Registratuur, 1930, Publicatie No. 51.

The order, according to accessions, is suitable both for the drum selector as well as for the signal selector. The former works with special advantage, if, for the answering of special enquiries, particular information is needed, for it can be printed mechanically. It should be considered, however, in the interest of economical working, whether the number of the required titles is large enough in relation to all the plates which have to pass through the machine. The arrangement of the title plates according to the systematic catalogue divides the stock of plates into a great number of divisions and sub-divisions. As all the plates lie in a systematic order every desired group or sub-group, even every plate, can be found and printed easily without using the signals. Thus the signals become " free " for the marking of " generalities " which do not refer to single groups or titles, but to " formal " qualities within the whole stock, such as Provenience, Literary Form, Language, Time, or other relations of internal meaning. The maintenance of the systematic order demands much care and labour, as well as much storage room. Moreover, a special numeration is necessary within the single sub-divisions in order to fix their place in the system. These numbers must always be found out by a special number key, if single titles—*e.g.*, the writings of an author—are to be printed separately.*

IV

The Adrema method is flexible enough to allow a partial combination of the several selector systems. Thus the stock of plates can be arranged according to certain broad systematic main divisions—and, if necessary, according to sub-divisions—and within these the alphabetical or the accessorical order may be chosen. The latter, as compared with the former, permits the more universal application of the selection method. The " broad systematic " groups may be divided, for example, by signalisation into thirteen or thirty sub-groups, each single one of which can be printed separately. As has been emphasised above, one has only to be careful that the stock of plates in the storage groups does not become too extensive, as otherwise by printing a comparatively small special group too large a percentage of " skipped " plates are run through the machine.

The " signalisation " of the title plate can be done either by one single signal, if it is to appear only corresponding to this standpoint—*e.g.*, " mathematics "—it can also be done according to several standpoints if the contents of the book or pamphlet belong to several fields—*e.g.*, mathematics, mechanics, physics, astronomy, etc. As thirteen or thirty signals are at one's disposal, one can thus make the same number of subject classifications and accordingly supply the stock of plates with the corresponding signalisations. The meaning

* The Berlin High School Library has—provisionally—ordered its supply of plates alphabetically and marked the plates with the aid of thirteen signals according to the main groups of its systematic catalogue, which correspond to the main fields of Technics taught at the High School. It is thus in a position to print each of these groups *in toto* alphabetically ; before they are placed in the whole stock the accessions are printed, also alphabetically, and according to the thirteen main groups in a large number of " Monthly Accessory Lists " for despatch to other libraries and to institutes of the H. S. At the end of the year an accumulated total list is made, which, too, can be divided into thirteen special lists in the same way.

of the signals need not be the same for the whole of the stock of plates, it may also be changed according to the chief divisions of the stock, which must then, at the same time, be separated in the trays.

With such a kind of signalisation one could, for example, print out of the class "Architecture": Ecclesiastical Architecture, Civic Architecture, Military Architecture, Town Building, with their respective sub-divisions; or from the class "Language": Greek, Latin, Germanic, Roman, Slav, Semitic Languages, etc. With the division of the title material in such an "horizontal" way—*i.e.*, subject groups and sub-groups—one would consume the signals more or less, according to the field which they cover. It is advisable, therefore, to reserve a number of them in order to mark the plates according to "form" points of view; in the class Architecture for instance; Roman, Gothic, Renaissance Architecture, etc.; in the class Language, for example: Lexica, Grammars, Anthologies, Collected Papers, etc. These "form" or "vertical" signals which mutually exclude each other, now can be switched together with the "material" or "horizontal" signals in such a way that they limit or extend the selection all according to the meeting of the single markings, and in this manner greatly increase the possibilities of the selective printing.*

The title plate of the book "Julius Schlosser, Die Kunstliteratur. Ein Handbuch zur Quellenkunde der neueren Kunstgeschichte (Wien, A. Schroll, 1924)," which will be classified under the heading "Art," could receive, for example, the following signalisations (horizontally): General Art; vertically: History, Modern Time, Sources, Handbooks. In addition, one would also add the signals for the sub-groups: Architecture, Plastic, Painting, so that, for any selective printing of "Handbooks of the sources of the more recent architectural history" this book would appear, although it deals with the whole field of the history of art, in this way and by suitable selection of the signals not only the books which relate to one single theme or enquiry, but also all others are included which deal with the subordinate subject. The marking of the plate with the proper signals must, of course, be done carefully, according to the contents of the book concerned and, if possible, should take future enquiries into consideration.†

A second method of selective printing is that by means of a drum selector. This is excellently suited for answering special questions: by use of the systematic catalogue the compilation of the literature for the desired information is made from one or more divisions; the plate numbers are transferred to a number card as "manuscript." It is advisable to procure number cards for certain, frequently recurring enquiries and to keep them up to date. By this means the giving of information is made, so to say, fully automatic, in that the respective

* By the switching together of signals of the two categories can be printed, for example, "Mediaeval Italian military architecture" to which then, for instance, the form-term "In Italian language" might be added. Or, one could signalise "Italian sources for the ecclesiastical architecture of the Renaissance in Northern Italy".

† The use of formal terms in the cataloguing work plays a part in the D.C. as to "Supplementary numbers", and in more recent "analytical" methods. *Cf.* Eppelsheimer, Der neue Sachkatalog der Mainzer Stadtbibliothek (Zentralbl. f. Bibliothekswesen, 46, 1929)—H. Trebst, Studien zu einer analytischen Sachkatalogisierung, *ib.* Volume 47, 1930.

number cards are simply given to the printing department and the rest is left to the operator. This is a method which specially meets the requirements of Special Libraries and Information Bureaus.

Drum selection and signal selection may also be combined with each other, and this in such a way that the selection by means of the one method is extended or restricted by the simultaneous switching in of the other. Assuming that some information sources on "Norman Cathedrals in England" are to be printed from the group "Ecclesiastical Architecture," then by switching on the signals "Monuments and Inventories of England" the selection could be extended to this category. Or, the same number selection is restricted by the geographical signal "South England" to the literature on "Norman Cathedrals in South England," or, by a provided signal, "English Language" to "Norman Cathedrals in South England, Works in English Language."

Extension of the selection or the restriction of the same can be matched to each other according to the nature of the question and the signals and number cards kept in many ways and combinations.

V

The great number of the combinations are very useful to express the "notations" in the divisions and sub-divisions of some classification systems of large extension. This may be illustrated briefly by the example of the D.C. in which the notation-symbols are made up of decimal figures, each of which represents a different grade of value, from the ones to the thousands, ten thousands, etc. Therefore, title plates marked according to D.C. must be printed also by signal numbers of various values. Thus, in order to print the D.C. symbols with the aid of the Adrema-signal-machine, the combination of these signals at first is to be "translated" into decimal figures. The Adrema Co., therefore, has drawn up a special key which permits the representation of two-figure-decimal-numbers with the thirteen-part selector machine (whereby three signals remain disposable) whilst the thirty-part machine is able even to represent the enormous number of 999,999 (*i.e.*, a million!) combinations, or six-figure-decimals. This machine can thus select mechanically from a stock of plates, ordered, perhaps, chronologically or alphabetically, any sub-division lying within a six-figure D.C.-symbol. If this system is to be applied effectively, the plate catalogue should be arranged in correspondence with the D.C. classes and stocked separately according to the first decimal point. Up to which place the broad order can be taken depends upon the character of the literary collection. A library, whose literature covers all fields of knowledge, would, for instance, stop its plates according to the first and second decimals—*i.e.*, ninety-nine groups—and would be able to use a further six decimals in each group for the mechanical selection.

The real practical value for such an extensive signalisation could only be had in certain special libraries, where it might be of importance to follow frequently used classes of literature to their finest and

* For more details on the selection by number cards see my article "Die mechanische Herstellung und Auswertung des technisch-wissenschaftlichen Literaturnachweises", as quoted above.

minutest sub-divisions and to print them mechanically out of the whole stock. A special library for "Electric Light Technics" (621.32) would certainly stock its supply of plates according to the first ten sub-groups (621.320/9) and only need four further points to reach the last sub-groups (*e.g.*, 621.326.658.5 = Devices for avoidance of short circuits in building-in illuminating bodies). In practice one should stop even considerably earlier, about after the two first decimal points, and leave the remaining four points free for other signalising possibilities, for example, for supplementary numbers.

At which decimal point a stop should be made naturally again depends entirely on the character of the library, the broad division and the fine division of each field in the D.C. Only one must always stop at the same point within the division groups, as one cannot use main figures and supplementary figures in alternation on the same decimal points.* One cannot signalise in the group "Architecture," first 726.6(43) "12" (=German cathedrals in the twelfth century) and at the same time 72 (43) "12" (=German architecture in the twelfth century), for in the second case the result would be 724.312 (="Gothic Revival").

In the development of the D.C. it evidently has been desired to simplify the D.C.-symbols by combining the main with the supplementary-numbers which express the general features of a subject, and so to increase their possibilities of expression. That is the same idea which leads to "form-terms" in other systems of classifications. As has already been mentioned, the selector machine of the Adrema, with its signalisation devices, is perfectly well in a position to meet these requirements. The main numbers will rarely be composed of so many decimal points that no places are left for the formation of supplementary numbers. Moreover, every library, even if it desires to apply the D.C. in the main groups, can break off at any place and may signalise from that point the "coded" form terms.

There is scarcely any need to mention that combinations between D.C. symbols (*e.g.*, 662.76 : 536.662 = Calculation of the heating value of gases) cannot be selected with signals by a single operation, but only with the aid of the drum selector process. Only in the combination of all signalising and combination possibilities is the manifoldness of this ingeniously designed and constructed machine revealed.

VI

There is a great flexibility and adaptability in the Adrema-system, if it is not rigidly used, but applied according to the requirements of the special case. This process of catalogue-printing is well fitted for revealing the stock of title plates according to the most varied directions and requirements. As the technical production of the catalogue, in whole or in parts, does not cause any difficulty nor any expenditure of time nor of staff, this procedure can be carried out with comparatively small running costs (apart from the costs of the equipment, which pays for itself in a short time). As over and above that, by the simplicity of all the mechanical operations the work can be completely mastered in a short time by untrained staff, this method can be adopted

* Naturally each plate if D.C. is used, must carry besides its running number, the full decimal number to be printed.

as an effective means of aid and organisation in the service of the library and information bureau. It meets the necessary specialisation of the information in an excellent manner ; it divides the cumbersome and, often enough, obsolete main catalogue into a number of special catalogues, without in any way endangering their inner unity. It satisfies new requirements quickly by new means, leads in various ways to the same point, namely : to the books, to literature, and to documentary sources. The unchangeability and the unimprovability of the antiquated catalogues can be abolished, as at any time from the original material—the stock of plates—a renewed, and an improved catalogue can be produced. The stream of the masses of literature, so difficult to order, need no longer flow uncontrolled into the too narrow basin of a single catalogue, but can be conducted, by a variety of ways, from the reservoir of the " plate archive " to meet the actual demand. The speed and exactitude of the mechanical working method release the information and documentation service from superfluous and time-robbing clerical work, facilitate the exchange of knowledge, literature, and sources amongst the different institutions and contribute to strengthen the co-ordination of all intellectual and scientific work.

DISCUSSION.

This was discussed with the preceding paper by Sir Frederic Nathan, reprinted on page 40.

Contd. from p. 40]

reasons he had stated. He hoped that, with experience, the abstracts from all countries would reach a satisfactory level. The excellence of the Power and Fuels Abstracts Bulletin, in English, published by the Japanese National Committee of the World Power Conference was an example of what could be done.

He had not experienced the difficulties with the abstracts mounted on cards, referred to by Mr. Gibson, but the use of a suitable paper would be considered.

The U.D.C. manual contained an alphabetical subject index. The U.D.C. was based on the Dewey classification, extended to meet modern requirements for indexing journal articles, scientific and technical papers, etc. Negotiations were in progress with Mr. Dewey in regard to the publication of an English edition.

Films as a Medium of Information in Education, Science and Industry

By F. A. HOARE.

This Association, one of whose main objects is to promote the wider dissemination and the systematic collection and use of information, cannot fail to be concerned with the problem of utilising films as a medium of information. It is true that the national distrust of the cinema has prevented a fuller and earlier recognition of its vast potentialities, but, like all forms of expression of human thought, it has passed through its rudimentary stages and has now emerged as one of the strongest influences in modern social life. By reason of its universal appeal, its intense vividness, and its dynamic nature, it easily transcends in effectiveness and potency any other form of human expression. In the comparatively short space of thirty years the film has been brought to such a state of technical excellence and has won for itself so strong a place in the life of the community that there is hardly an aspect of modern life which it fails to influence. It penetrates into every class of the community and sweeps away barriers to the acquisition of knowledge arising from loss of opportunity or lack of learning.

It is not my purpose to discuss in this paper whether its influences, as at present directed, are good or bad. Criticisms and protests against the cinema as an alleged source of moral and intellectual degradation are rapidly giving way to a more general realisation of its vast potentialities for education and culture. We get the films we deserve; and if the finest intelligences and the most thoughtful and creative minds continue to hold themselves aloof from problems of film production and utilisation, whether in education, science, or industry, we can hardly complain if the standards reached in cultural content or in technique fall short of those we would desire. Certainly, so far as England is concerned there is little, if any, co-ordination between educational and industrial bodies on the one hand, and the film trade on the other, although in some foreign countries the learned professions and industrialists have realised the power of the film in research, in education, and in industry, and have established machinery for co-operation with the makers of films.

Films as Informative Agents.

The purpose of this paper is to discuss the film in the service of education, science, and industry. It is so vast an undertaking that I must perforce leave many gaps and merely indicate in general terms what is being done at present and what might be done given a more thorough realisation on all hands of the power of this new medium for the imparting of information. I shall not concern myself greatly with the function of films as illustrative media or with their general cultural and educative capacity, though I believe them to be powerful agents for increasing and extending personal experience, for widening

the intellectual horizon, and for developing the power to think and to express oneself verbally and in written form. My general theme is the utilisation of films for conveying facts and information to the minds of other people ; that is for the promotion of concrete knowledge rather than abstract knowledge and the ability to generalise. It is with the capacity of the cinema to instruct that we are primarily concerned, whether that instruction takes the form of presenting the facts of a scientific or industrial process, or of the stages of a scientific experiment and the lessons to be learned therefrom, or of the advantages of using a particular commodity produced by some trade organisation.

Mechanical Aids : their Use and Abuse.

We live in a mechanical age, and those of us who are concerned with the dissemination of information are being forced to consider how far the use of mechanical devices, like the cinema and wireless, can and should replace or supplement the printed word and other more orthodox media. A word might here be said to anticipate the argument of those who object to mechanical aids on the ground that their use will involve the partial elimination of the personal factor. Machinery in modern industrial life ought to result in an improvement in the health, happiness, and efficiency of the persons concerned. Education in an industrial age cannot continue on lines which were suited to pre-industrial modes of living. Intellectual poverty is not a necessary accompaniment of the machine age, which should result in the increased availability and wise use of leisure and intellectual interests. Drudgery and inefficiency have never been associated with, nor can they be depended upon, to create the model intellectual life. Bergson, in his book " Creative Evolution," says : " As regards human intelligence, it has not been sufficiently noted that mechanical invention has been from the first its essential feature, that even to-day our social life gravitates around the manufacture and use of artificial instruments, that the inventions that strew the road of progress have also traced its direction." Those who believe in utilising films in education to their fullest possible extent are by their wisdom and leadership determined to turn the machine to greater use. What the industrial age needs is not fewer machines, but leaders who are competent to grapple with things as they are and to convert the productions of modern mechanical science to the uses of education and culture.

Film Experiments in Education.

As a result of the practical film experiments which are being carried out in different parts of the world, the value of films in school education is gradually being established. An elaborate investigation undertaken by Mr. Frank N. Freeman, of the University of Chicago, and Mr. Ben D. Wood, of Columbia University, to measure the value of motion pictures as supplementary aids in regular classroom instruction, was recently conducted with 11,000 children in a dozen widely-scattered cities in the States. An account of the experiment is given by Messrs. Wood and Freeman in " Motion Pictures in the Classroom," published by the Houghton Mifflin Company, Boston. The twenty films used were specially made to specifications supplied by experienced

teachers. Ten geographical films and ten general science films were used. The children were divided into two groups, one taught with the films and one without. After a comprehensive series of tests it was found that sixty-one per cent. of the film-taught pupils in geography and fifty-nine per cent. in general science exceeded the average of the control groups who had been taught without the films. It must always be remembered, however, that the most valuable contribution which films can make to education is not susceptible of statistical assessment, and it is important to observe that the teachers were almost unanimously favourable to the use of films.

Many years ago Prof. Philpott, working at University College, London, with films of varying subject matter, demonstrated that film memories were more vivid and lasting than other memories. Prof. Knowlton, of Yale University, tested 521 pupils of twelve to thirteen years of age from February to June, 1928. With some groups he used historical teaching films; other groups studied the same topics without the aid of films. The most important finding which emerged from this experiment was that the films helped the children both to learn and to remember information. Moreover, their use led to fuller discussion and to wider reading. ("Motion Pictures in History Teaching," Knowlton, D. C., and Warren Tilton, J., 1929.)

In England a valuable enquiry in the use of historical teaching films was conducted by the Historical Association with the financial assistance of the Carnegie Trustees. The actual experiment lasted a year throughout 1929, and the University of Leeds kindly allowed the work to be conducted from its Education Department as a centre, while the Leeds Education Authority granted full facilities for tests in the many types of school under its control. Miss Frances Consitt, who carried out the investigation, writes as follows: "Does the film help children to learn and to remember historical information? I think all teachers would agree that if the film gives life, fosters the imagination, stimulates mental effort and arouses interest, it follows naturally that it will help children to learn and to remember. And the tests showed that this was the case.

"Two other general results may be briefly mentioned. In the first place, use of the film forces children to find their own words to express opinions and describe scenes, not merely to borrow those of the teacher or text-book. Thus the film, instead of helping to form the 'mass mind'—another general criticism laid against its use—encourages originality. Secondly, it may be noted that the film is of value in that it presents a point of view to the children, in addition to that of the teacher and their usual book."

The Middlesex Sound Film Experiment.

More recently still an experiment in the use of sound films in schools has been conducted, and since by personal experience I am more fully aware of the details of this experiment than of any other, I propose to give rather fuller details about it. The Middlesex Experiment in the Use of Sound Films in Schools was conducted by a joint Committee representative of the Middlesex Education Committee, six Part III Education Authorities within the County of Middlesex,

the teachers and the trade organisations concerned. The Western Electric Company placed at the disposal of the Organising Committee one of their portable talking picture equipments and the necessary services of the technical experts for operating it.

The experiment began on February 2nd and continued with a short break for the Easter recess daily until May 4th, 1931. Fifteen schools co-operated in the experiment, and these included six single-sex primary schools, one junior girls' school, senior schools (boys', girls', and mixed), one boys' secondary school, and one mixed secondary school. Thus there came within the scope of the experiment children of a wide range of age and ability, and an opportunity was afforded of comparing the educational value of films when used in the education of girls and boys, younger and older, good, average, and backward pupils.

The equipment was the latest type of portable sound picture reproducing apparatus. The unit is entirely self-contained, includes its own generator for the supply of power, and is carried on a van. The various components consist of a projector, amplifier, portable screen, horn, and power conversion equipment, each of which is contained in a special trunk. The entire apparatus, which was moved from day to day round the fifteen schools participating in the experiment, can be erected and dismantled in an hour. The power generating plant consists of a four-cylinder overhead-valve petrol motor with a special governor to ensure constant speed. The films used were entirely of the non-inflammable type, and consequently no special precautions against fire, other than those usually conducted in schools, were necessary.

The choice of films was undertaken by the Organising Committee, who examined a large amount of material offered by British Instructional Films, Limited, and British Movietone News, Limited. Finally sixteen films were selected and were divided into four groups. Four of the films dealt with biology or nature study, if we include " The Flight Machine," which is a clever comparison of the flight of birds and aeroplanes ; six of them were geographical, if we include a " Visit to the Coal Face " as representing the industrial aspect of human geography ; and five of the films, although dealing with a variety of topics, can be regarded as belonging to a class designed to bring children into contact with outstanding events and personalities in modern life, as, for example, " The London Naval Conference," or " The Talk by Grenfell on Labrador."

It should here be noted that these films were all originally designed for entertainment purposes and were not of such a character as can do more than indicate what might be done if there were available talking pictures specifically designed for educational use. An important secondary aim of the investigation has been to examine the means for breaking down the " vicious circle," which has hindered progress in the application of this great modern development to educational purposes. At the present time the schools of this country are deprived of the use of films because on the one hand the producers hesitate to make films for school purposes while there is so little apparent prospect of adequate financial return for the expenditure involved ; and educationists, on the other hand, are reluctant to spend large sums of money on acquiring projectors so long as the number of suitable

educational films available is so small. When the report of the experiment is published in the autumn it is hoped that definite constructive suggestions will emerge which will render possible the extended use of this great scientific aid to education.

In the conduct of the experiment a large measure of responsibility and initiative was left to the teachers in the co-operating schools. The success of the experiment depended in large measure on the ability of the schools to run it as a normal item to their work. The final report, therefore, will represent the pooling of the experiences of teachers who by reason of their close contact with the pupils tested were able to state to what extent the films used were educationally effective. The Organising Committee desired that each film should be shown to classes of varying ages and standards of mental ability. As divergent types as possible were selected in each school, and in particular the Committee were anxious to ascertain whether the sound film opens up new channels for the presentation of ideas to dull and backward children. It might here be said, without unduly anticipating the conclusions of the experiment, that positive evidence has been collected about the unique value of sound films in teaching retarded or dull and backward pupils, whose interest and attention have been aroused and concentrated to a hitherto undreamt-of degree by this combination of visual and aural methods of approach. The effectiveness of teaching by films is very difficult to assess qualitatively, but it is confidently expected that statistical evidence will be forthcoming to reinforce the unanimous opinion of all the teachers who had experience of the experiment as to the value of sound films in the teaching of retarded children.

Very carefully-prepared questionnaires on each of the films were provided, and the children were also asked to write essays, which were quantitatively assessed by the teachers. The Committee recognised that the answering of questionnaires and writing of essays by the children by no means exhausted the possibilities of ascertaining the effects of the films on the children. They therefore urged the teachers by conversations, oral questioning, discussion, and by other means to assess the value of the films used, and exhaustive questionnaires for the use of teachers were also provided. The Committee stressed the advantage of regarding the experiment as part of the ordinary routine of the school; interference by the presence of outsiders was reduced to a minimum, and anything which suggested a special "stunt" was carefully avoided.

Despite the fact that the film material available was by no means ideally suited for school purposes, the potential value of sound films as aids in education has been amply demonstrated. It is clear that they can be used effectively as a means of arousing interest preparatory to teaching, as an actual teaching medium, as a method by which pupils can be helped to assimilate and revise knowledge which may have been imparted by other means, and as a means whereby school work and activity can be associated with commerce and industry, as, for example, by relating scientific experiments in the laboratory to their practical application in modern and industrial processes.

It is hoped that the report will deal with the contentious subject of the superiority of the sound film over the silent film for educational purposes. By a simple mechanical device it was possible to eliminate

the sound part of the film and to compare the effectiveness of the silent film with the sound film. The mere elimination of the sound part with some classes was not, however, entirely a fair test, since the necessary explanatory captions were, of course, missing. During the course of the experiment a whole series of interesting tests was carried out; thus efforts were made to compare the results obtained when classes of approximately equivalent standards were treated differently; some had a preparatory lesson and recapitulatory lesson; some had one and not the other; some had neither. Again, some classes were submitted to deferred tests after the lapse of about seven days in order to test the durability of the impressions conveyed by the films.

The Place of Films in School Work.

If I now offer some general observations upon the place which sound films may ultimately occupy in school work it must, of course, be understood that I am merely expressing personal opinions and that these will not necessarily be generally agreed to by the Committee organising the experiment. I believe that the effective presentation of some of the fundamental principles in the main subjects of the curriculum by means of scientifically-produced films can reduce both the time taken by the pupils to assimilate this elementary knowledge and the drudgery which its assimilation involves. If through the use of mechanical aids to learning, such as films, at the elementary stage some elimination of time and effort can be effected, the whole educational process can be speeded up and teachers will to a large extent be liberated from the routine teaching of the elementary subjects in order to proceed to more advanced work or to the more specialised preparation of their pupils for life in industry or commerce through technical education.

Again, I do not believe that there is any validity in the chief objection which has been advanced against the use of films in school work—namely, that they leave the child in a passive state of mind and stimulate no intellectual effort on his part. On the contrary, they arouse and maintain interest; they help to develop originality and a larger measure of self-activity; they improve the quality of reading material; increase the pupil's ability to discuss topics and to write about them; they enlarge the vocabulary; enrich personal experience; correlate the work of the classroom with the life of the world outside the school; and develop the ability to concentrate mental activities. It will be generally agreed that these are among the chief objectives of a sound school system.

Future Developments in Film Education.

So far as the future is concerned, I think the outstanding need is for the establishment of some central organisation through which teachers on the one hand and producers on the other can co-operate in the production of films carefully adjusted to the syllabuses of the schools. The function of the carefully-planned sound film in mathematics, geography, or science, or in any other subject, will be to present the material of the lesson in the most perfect form which the best teachers can devise. Once a film has been made in this

way, the highest and most skilled technique of teaching will be made available for the children in any and every school where a projector is installed. The use of films as an illustrative medium will, of course, remain one of its chief functions and will play a powerful part in broadening the minds of children and stimulating their imagination, but it is as an actual teaching medium rather than as a medium of illustration that sound films will, I believe, ultimately take their place in the schools. They will be directly related to the day-to-day curriculum of the school and will provide a means for strengthening the teaching of the fundamental school subjects. They must be so devised that they will perform a task in education which cannot be done so effectively by any other means. The experience we have gained in the Middlesex experiment and the remarkable technical developments taking place in film production, particularly in connection with cartoon pictures and moving diagrams, reveal that we have here an instrument which, if properly handled, can come near to revolutionising teaching method in the schools of the whole world.

Films and the School Curriculum.

It is necessary to examine which departments of school work can best be dealt with by the moving picture.

Geography.

Certainly in geography, so far as it deals with life, the film can be a powerful medium. It can depict the actual life of people in foreign countries and can consequently be used by the teacher to summarise a series of lessons. As geography teaching becomes more scientific, films involving the use of diagrams, graphs, statistics, contours, and sections will be increasingly needed. Through them lessons in such subjects as isobars and isotherms can be given and can be followed immediately by pictures illustrating the effects of climate upon the lives and occupations of people in different parts of the world. Natural phenomena can be better shown by the film than by any other method, and in this connection there will be a need for an ample supply of films depicting the waterfall, iceberg, mountains, river rapids, volcanoes, eclipses of the sun and moon, and so forth. Then films showing typical human activities in various parts of the world will be required, for example, tea plantations, sugar and rice growing, mining for coal and gold, cattle rearing, sheep shearing, rubber growing, iron and steel industries, shipbuilding, and these should be related to such engineering feats as mountain railways, hydraulic lifts, and bridge building. It is probably through geography and the geographical film that beginners in the art of living can be shown life in its multifarious manifestations.

Teaching of Science.

In science teaching the film can be a powerful ally. The principles of common mechanical devices such as the pulley or lever can be demonstrated and the whole subject can be summed up by showing cranes at work for the construction of cantilever bridges. Though it can never be a substitute for personal investigation into subjects

like chemistry and biology, it can illustrate processes and exhibit continuous development. This especially applies to the study of natural science, in which films can arouse interests in the wonders of nature and can foster a desire for scientific enquiry.

Films in History Teaching.

In the teaching of history the place of the film must ultimately be an important one. But the reconstruction of history through the film is an intensely difficult matter and can only be undertaken with the aid of experts. In no other branch of school work does the possibility of inaccuracy loom so large. Moreover, the production of films which are in the nature of pageants is an expensive undertaking. The actual filming of current historical events has been carried on practically since the invention of the cinema in the later years of the reign of Queen Victoria, but no steps have been taken to preserve for educational uses all these films of historical interest. This ought to be undertaken by some central organisation forthwith. Films, however, can be made to represent some of the events of social and industrial history. The filming of stage plays which have been produced with great attention to accuracy and historical detail in costume and scenery would make them available for schools and educational institutions of all types.

Films on the Teaching of English.

The coming of the sound film opens up great possibilities in the teaching of English, and through it pupils can be helped to acquire both facility in speech and a large vocabulary, as well as correct articulation and pronunciation. Speech training is pre-eminently the function of the schools, and properly-constructed sound films can materially assist in the correction of slovenly and incorrect habits of speech acquired out of school. The two great faults of indistinctiveness of articulation and incorrectness of pronunciation can be attacked through the medium of films.

In literature the study of a Shakespearean play could be effectively rounded off if children were able to see the play acted, and producers would do well to offer the schools a whole series of classics produced in scholarly fashion. Perhaps the main function of films in literature comes through the revision of works studied in detail and the help it can render the pupils to visualise scenes.

Films in the Teaching of Mathematics.

Attention has already been directed to the possibility of utilising films in the teaching of mathematics. There is general agreement to-day that the teaching of arithmetic needs considerable improvement in regard to both choice of material and the use made of it. Its normal presentation in schools is frequently confused by the addition of matter which is without meaning to the child and is seldom of value to him in after life. Our modern industrial system and the part played by science in modern civilised communities continue to make greater demands upon the mathematical knowledge of the ordinary citizen. The scientific and engineering inventions of the modern world—motors, aeroplanes, wireless telephony—all require

some knowledge of mathematical principles and their applications if they are to be even superficially understood. Civic, national, and even international finance require an intelligent person to have an increasing amount of mathematical knowledge. Clearly, therefore, much of the traditional arithmetic of the schools ought to be replaced by new materials providing a wider mathematical training for children, and there should be included in the training of all normal children such parts of mensuration, algebra, geometry, and trigonometry as are necessary for an intelligent understanding of the problems of everyday life. Through films the mechanical, lifeless and abstract treatment of this subject so common in the past can be changed into a vivid, more logical, and more practical method of treating the subject, helping pupils to appreciate both the beauty of mathematical truths and their practical applications. A series of films might be built up devised to develop in the pupils an appreciation of a coherent system of mathematical ideas and a realisation of the subject as an instrument of scientific, industrial, and social progress.

The Film in Relation to Art Teaching.

In the realm of drawing and applied art the film can play a large part by bringing vividly before the pupil's eyes the work of the great artists of the world not only in pictures and sculpture, but in architecture and in furniture. Such a contribution to the work of the schools would result in a greater recognition of the importance to the whole community of a finer taste in matters of art and would help them to attain a better standard of artistic appreciation, especially in regard to home decoration.

Films and Music Teaching.

Similarly, in the teaching of music, lectures on the rudiments of construction can be given by men of acknowledged eminence, illustrated by appropriate examples and made available for use in the schools. The national songs of all countries, melodies of great composers like Handel and Bach, of Beethoven and Schubert, lyrics by Schumann, and the best of Mendelssohn, can be succeeded in due course by the preparation with appropriate exposition of sound films of sonatas, symphonies, quartets, classical songs, excerpts from oratorios and cantatas, and scenes from operas. Accompanying lectures and explanations would deal with inherent structure and style of the music giving some account of the composer and his relation to his contemporaries and his predecessors.

Films and Physical Training.

An important part of the work of the schools is that connected with physical training and games. Even here films can be utilised to show correct movements, and the contribution which games and athletic sports, folk dancing, swimming, and, indeed, all physical activities, make towards the production of a sound and healthy constitution. The study of the science of athletics through slow motion pictures accompanied by the commentary of experts would do much to correct dangerous tendencies which arise from an unscientific indulgence in excessive physical activities.

I shall necessarily deal more briefly with the scope and function of the film for instruction, record, and propaganda purposes in relation to science, medicine, and public health, because in all these fields it is still in a preparatory stage. Already, however, a considerable number of films exist which deal with preventive medicine, and through this service active propaganda against such diseases as tuberculosis and malaria are carried into the remotest corners of the world. Government Health Departments, medical officers of health, as well as voluntary organisations like the British Social Hygiene Council, have demonstrated in the most practical way the effectiveness of a film campaign in regard to personal and social hygiene. In some countries a regular cinematographic service in health instruction has been organised in connection with workshops, factories, and other industrial establishments, and excellent work is being done among the population by means of travelling cinemas. The films are invariably accompanied by lectures delivered by medical officers of health.

It is, however, in regard to medical and scientific research that an increasingly-elaborate technique for taking cinematograph films is being developed, and in particular, by way of illustration, I should like to refer to the work of Dr. R. G. Canti, of St. Bartholomew's Hospital, London, who, in co-operation with other research workers, has been taking cinematograph films of living cells with the object of applying that method to the investigation of the effects of irradiation on cancerous tissues. He has discovered that the utilisation of continuous cinematograph films in place of observers has made possible a manipulation of the time factor so that rapid movements can be slowed down and every phase analysed, or slow movements can be compressed so as to transform changes imperceptible to the eye into a continuous progress. Everybody has seen nature films, which show in a few seconds a bud opening, its petals spreading and the ripe stamens thrusting themselves into the air and spilling the pollen. The extended use of slow motion pictures in all branches of scientific study enables these swift reviews to be studied simultaneously by many observers, and they can be repeated as many times as required until the true course of events is grasped. Further, by the device of running the film backwards, effect and cause, consequence and antecedent can be seen instead of being guessed. The application of powerful microscopes to the cinema (micro-cinematography) has made possible the observation of the behaviour, movements, and life of an infinitesimally minute world. The many forms of apparatus already on the market require only minor adaptations to fit them for taking films of any kind, at any rate, and the progress of science will undoubtedly be accelerated by their increasing use.

In relation to modern surgery a number of films have already been made showing various surgical operations, such as trepanning, a cancer operation, blood transfusion, and X-ray experiments. A notable example of this kind of film is that of the " Cæsarian Operation " produced by Electrical Research Products, Incorporated, in which all the details of this most intricate and delicate surgical process are illustrated and explained by Dr. de Lee, of the Chicago Lying-in

Hospital, in such a way that medical students for all time will have at their disposal the practical results of a lifetime of study and research and a vivid demonstration of the highest manipulative skill in surgery. I can, as I have said, do no more than indicate in outline the vast potentialities of the film in this branch of scientific enquiry.

THE FILM IN INDUSTRY.

I now propose to deal briefly with some of the more obvious applications of the cinematograph in the organisation of industry. In the first place, it can be used for an examination of the productivity of the worker, both quantitative and qualitative. In the hands of persons responsible for scientific management, the film, therefore, can be a powerful ally. For example, a film of the best workers judged by the volume of daily output will show how work should be done, and a film of the other workers will show how work should not be done. These can be used, first in order that the scientific organiser may observe by the slow-motion process the right and wrong ways of working, and, second, in order to teach the right way to those who are willing to learn. They can be used also in conjunction with investigations into symptoms of fatigue at successive periods in the day's work. Thus a cinematograph can give pictures which can be studied at leisure, repeating observations as often as desired, illustrating the quality and quantity of output, working speeds, and degree of fatigue, each characteristic being considered separately or in conjunction with others.

In connection with the examination of movements and tools and the elimination of waste motions, the cinema provides a method by which movements can be better observed, decomposed, new movements discovered, time and fractions of time counted, so that schemes for new systems of work or for the training of workers can be evolved.

It is perhaps a little too early to say to what extent the cinema can be used in conjunction with the various devices to which experimental psychology has already had recourse in order to detect and measure degrees of fatigue. It can clearly furnish examples and can help to educate the workers themselves in the fundamental principles concerning fatigue. It is not clear, however, that the cinema could be specifically applied to the ascertainment of fatigue, although several films have been made in Germany to measure the consumption of energy during work, and the effort expended on the accomplishment of various tasks, such as the raising of a weight and the turning of a handle. The observation of fatigue is an integral part of scientific management, and further experiments will undoubtedly be undertaken involving the use of the cinema and giving graphic reproduction of the effort spent on various tasks, such as lifting weights, pushing barrows, pressure of hands on shears, and on the manner in which the breathing is affected, the behaviour of the pulse, and the loss of strength during these tasks, all of which phenomena readily lend themselves to film illustration.

Perhaps most important of all among the future uses of the cinema will be its utilisation in connection with vocational guidance and selection. It would appear that the customary tests for discovering vocational aptitude, involving as they do the provision of somewhat

complicated sets of apparatus, might with advantage be replaced by films devised to test the various faculties, such as attention, perception, and interpretation. In the more complex analyses of personal factors a case has been advanced for an examination of temperamental qualities, as, for example, by arousing some particular emotion in order to watch the observer's reactions and to record graphically the effects on the breathing or the pulse. The film would appear to be an admirable medium for this kind of test.

But it is in connection with the provision of information about particular kinds of work that the film can play its most important part in vocational guidance. Thus, in connection with any particular occupations it can show the processes of work peculiar to it, can supply facts about the people engaged in it, information concerning its economic conditions, food conditions, death rate, diseases, causes of accidents, rate and seasonal cycle of unemployment, and so on. It can convey facts concerning the place occupied by the trade in question among general occupations, the origin of the materials it uses, their quantity, mode of use, and the transformations they have previously undergone. Thus it performs an essential informatory and didactic purpose for which the cinema is the most appropriate medium, and through it a complete and complex body of information relating to a particular occupation becomes constantly available. There are already in existence many films recounting the history of a trade or occupation showing it as practised, indicating its importance to national or world economy, and showing the workers engaged in it in their economic, domestic, and social life. If these films were made available for showing to apprentices and young workers in the various trades there would undoubtedly be a consequential improvement in industrial efficiency.

In the more restricted field of vocational training the cinema can teach by illustrating practical demonstrations under working conditions of a machine and its component parts, tools, and the proper movements and positions which a first-class worker adopts in order to get the best results with the minimum percentage of fatigue. I have already indicated that the cinema can show to workmen the complete task of which his particular job is a part. He will then understand properly what previously meant almost nothing and see his work as an organic part in a whole productive scheme. Further, he can be taught the hygienic conditions under which his work is performed, what precautions he could take to safeguard his health, and something about the kind of accidents peculiar to the work he is doing, how and why they occur, and how they may be avoided. Demonstrations in all these matters by animated pictures taken from life will help to develop among workers and employers a more real interest in all the factors which make for industrial efficiency.

In an appendix to this paper will be found a note with which I have been supplied on the industrial use of talking pictures in the United States and Great Britain, and also a list of some of the films which are at present being utilised by trade organisations.

The most obvious method of utilising films in connection with industry is, of course, in connection with propaganda and direct advertising. Here, especially in regard to the sound film, the combined visual and aural approach makes an instant and irresistible appeal.

The Empire Marketing Board, for example, has developed the use of this medium for popularising Empire goods, and it has been reported that, used in combination with other methods of persuasion, astonishing results can be secured. For example, an attack on foreign butter in the North and Midlands was followed by an enormous increase in the sale of British butter. Again, in a campaign for the purchase of Australian oranges carried on in one week last year by the cinema in combination with posters the sales rose rapidly. The director of a publicity film concern states that a firm for whom they work originally allocated £2,000 annually for film publicity. So successful was it, however, that the amount was increased annually and now stands at £24,000. In another case an original allocation of £8,000 annually has increased to £34,000. A Co-operative Wholesale Society whose factory had not been doing well decided to adopt film advertising and the turnover increased by twelve per cent. These advertising films require the most careful preparation; they must be short and the propaganda should be indirect rather than direct. The most successful of them contain scenes in the factory and illustrate the processes of producing the articles concerned. Undoubtedly there is a vast field of development awaiting cultivation in connection with films in industry, and it would be well if those responsible for the research departments and information bureaux of trade organisations would study the best ways of utilising films more fully in their work.

CONCLUSION.

This paper has been prepared, rather hurriedly, during a period of stress resulting from the present economy demands in education. It would have been difficult at any time to marshal all the facts and arguments dealing with films in education, science, and industry and to present them in reasonable form and at moderate length. I could not do more than indicate, somewhat cursorily, I am afraid, some of the ways in which films can come to the assistance of those concerned with the dissemination of information and with research in science and industry. Each of these methods requires careful study and prolonged investigation if the best results are to be secured. The recently-established Commission on Educational and Cultural Films, of which our Chairman, Mr. A. C. Cameron, is the indefatigable honorary secretary, will publish in the autumn a report elaborating many of the points I have made in this paper and indicating how the serious use of the film can be developed. I recommend all those interested to secure copies of the printed papers of the Commission and to co-operate with it in the enormous task it has undertaken. Internationally, the whole subject of educational cinematography is under the care and oversight of the International Educational Cinematographic Institute at Rome, which is an integral part of the machinery of the League of Nations. I particularly want to acknowledge my indebtedness, especially so far as those sections of this paper dealing with the film in industry are concerned, to the monthly journal of the Institute entitled "The International Review of Educational Cinematography." A perusal of this valuable journal reveals how lamentably this country lags behind many foreign countries in the application of this powerful instrument to the education and

culture of children and adults. It is true that the extended use of the cinema involves expenditure, and for that reason in this period of financial stress it may be regarded by some as impracticable. I want, however, to express the view that wise expenditure is the soundest form of economy, and I believe that the investment of money in the development of the use of films in education, in scientific research, and in industry will be amply repaid through improved personal efficiency and happiness with consequent commercial and industrial prosperity.

APPENDIX I.

NOTE ON THE INDUSTRIAL USE OF TALKING PICTURES IN THE UNITED STATES AND GREAT BRITAIN.

The American film industry, both film producers and manufacturers of equipment, having exploited the entertainment field to what appears to be within measurable distance of saturation point, have recently turned their attention to the educational, industrial, medical, and religious use of talking pictures.

It is proposed, however, only to deal with their activities in the industrial field in this note.

The first development that took place in the United States was the production of sound motion pictures for advertising various commodities, and these were distributed through the cinemas. The public, however, re-acted against paying for entertainment and being shown blatant advertising, and this led to demands for other means of distribution, and called for a very much better type of advertising picture with a larger percentage of entertainment value.

At the present time a very large number of first-class advertising pictures are in circulation in the States, dealing with all sorts of commodities and the activities of various industrial concerns and, while they are still being shown in cinemas, they are chiefly being distributed by means of portable apparatus touring towns and showing programmes in halls and institutes, etc.

Films are also being used extensively for sales training. These are being made by concerns with large sales forces, and have proved very successful in improving the standard of selling amongst their men in the field. These industrial concerns are also using films for general propaganda amongst their employees to raise the prestige of their company and to show them the activities of other branches of the work which they may not be in contact with daily.

The American Telephone and Telegraph Company, for instance, have a large number of films, some of which are designed for the purposes of imbuing their employees with pride of the company for which they work, and others have been made for training new employees in their prospective jobs.

In England the use of talking pictures for similar purposes has not developed to anything like the extent to which it has in the States. There are definite signs, however, that the heads of large businesses and industrial organisations are beginning to realise the value of this new medium and a certain number of them have embarked on the production of films for the purpose of advertising their product to the public.

Distribution is available to them for their films in a certain number of cinemas in the country by payment, but the best class of cinema will not accept these films for showing. The chief reason for this is because the standard of the films already produced has been poor, but it is anticipated that if really good films of a high order and carrying an equal entertainment value to that of the ordinary entertainment picture were made, a larger number of exhibitors would accept them for showing in their theatres.

Other means of distributing films are available, such as portable apparatus for showing in halls, institutions, schools, etc., and daylight projection vans for showing to crowds in market places and rural areas, etc.

Practically nothing has been done in this country, up to the present, in the way of using films for sales' training or prestige propaganda amongst employees. There are signs, however, that a growing interest is being taken in the use of films for this purpose, and several trade organisations or associations have under their consideration programmes of films. Several Government Departments are also investigating the possibilities of using pictures in this way and in the very near future it is expected that such films will be in actual use.

Owing very largely to the keen American competition in this country in the entertainment picture industry, the attention of English producers has been entirely confined to the production of entertainment films and there has been a great lack of enterprise on the part of producers generally in developing the production of non-entertainment pictures. This situation, however, is changing and there are definite signs that capital is being attracted for the establishment of concerns whose principal business it will be to produce pictures for industrial and advertising purposes. Another field in which sound films are likely to play a prominent part is the dissemination of propaganda. Political parties have been using films for this purpose to some extent in the past, but are now beginning to realise the enormous value of talking pictures for propaganda purposes and are making great efforts to obtain the necessary funds which will enable them to embark on more ambitious programmes of films for the promulgation of their particular views. It should be remembered that talking pictures have proved in the entertainment field to be one of the most powerful means of influencing public opinion that has ever appeared in our social life, and every business man would do well to give consideration to this important subject as being something he will be bound to utilise in some way or other in future.

APPENDIX II.

A LIST OF EXISTING INDUSTRIAL FILMS.

J. Lyons & Co., Ltd.	The Barmaid's Song. Teany (Talking).
Reckitts	Mrs. Rawlins (Talking), featuring Mary Brough.
Lever Bros.	Port Sunlight (Synchronised).
Cow & Gate, Ltd.	Food for Thought (Synchronised).
Shell Mex	Liquid History (Synchronised).
Fry & Co.	Greatest Show on Earth (Cartoon) (Synchronised).
Canadian Pacific Railway	Through Canadian Rockies (Synchronised).
Cadbury, Ltd.	The Milky Way. Bourneville Works and Village.
Co-operative Wholesale Society	Her Dress Allowance (Talking). Teaching Him a Lesson (Talking). The Magic Basket. Reading Jam Works. Footsteps.
Chloride Electrical Storage Co., Ltd. (Exide Batteries)	Making a Talkie (Talking).
Cranbux, Ltd. (Odol)	Odol in Nurseryland (Talking).
Scrubbs Ammonia	Life is Brighter (Talking).
Wiggins, Teap & Co., Ltd.	The Story of a Sheet of Paper (Talking).
Dunlop Rubber Co., Ltd.	The World on Wheels, and others.
Champion Sparking Plug Co.	The Story of a Sparking Plug.
Guest, Keen & Nettlefold & Co.	From Ore to Finished Product.
Carborundum Co.	The Jewels of Industry.
Anglo-American Oil Co.	Wonderful Ship Surgery (shown at Gaumont's Film House).
Chivers	From Orchard to Home.
Hartley's	Morning Sunshine.
London Lubricating Oil & Grease Association	The Story of Lubricating Oil.
Hercules Powder Co.	The Doings of Turp and Tine.
Gregory & Roche (Tailors)	Marketing the Golden Fleece and others.
Smith Bros. (Murraygate, Dundee)	How Joytex Hose are Made.
Imperial Chemical Indus.	Grassland Management.
Chevrolet	The Birth of the British Chevrolet.
Harwood & Sons	The Brownlow Cotton Mills.
Morris Motors	Illustrating Cars.
Ministry of Agriculture	The Path to Poultry Prosperity.

Empire Marketing Board	One Family (but not issued) (Synchronised).
	Drifters.
St. Pancras House Improvement Society, Ltd.	The Faith in Action.
New Health Society (Sir Arbuthnot Lane)	Health in the Making.
Port of London Authority	Dealing with Cargoes.
International Advertising Congress (Berlin)	From the Magic Drum to the Advertising Tone Film (Talking).
Sheffield Junior Chamber of Commerce	Showing the Manufacture of Cutlery.
C. H. Champion & Co., Ltd.	Strike up Friendship (Talking).
Evan Williams Shampoos	The Ugly Duckling (Talking).
Yorkshire Main Colliery	Black Damp (Talking).
Bolle (German)	Bolle Milche (Synchronised).
Australian Government	The Heart of Australia (Synchronised).
	This is Australia (Synchronised).
British Columbia Government	Alice in Appleland.
American Telephone & Telegraph Co.	Home Team (Talking).
	Hello, Europe !
Vickers Armstrong.	
Lewis.	
G.W.R.	Westering.
	Docks of Britain.
Reckitts	Robin Starch.
	Bath Cubes.
	Karpol.
Thomas Glover	Making of Gas Meters.
United Glass Bottle Mfrs.	Processes.
Imperial Chemical Industries.	
J. H. Dalmeyer	Lenses.
National Federation of Launderers	Laundry.
The British Electrical Development Association, Inc.	The Power that Serves.
	Electric Cookery.
	Glasgow Electric House Film.
	Electricity—the Key to Comfort in the Home.
	Coal Heap to Consumer.
	The Perfect Servant who Rules the World.
	E.D.A. Exhibits at the British Empire Exhibition.
	Electric Farm in Sussex.
	Where the Money Goes.
	Once Upon a Time.
	The Blight of Coal Smoke and a Cure.
	A Problem Solved.
	Country Currents.
	Edward Eda.
Dental Films	The Leaflet.
	Beware of the Demons.
	A Brush with the Enemy.
	Don't Wait Till it Hurts.
	The Care of the Teeth.
	Tommy Tucker's Tooth.
	Your Mouth.
	Clara Cleans her Teeth.
Institution of Chemical Engineers	Making Rubber Goods of Latex by Electro Deposition.
	The Fabrication of Acid-resisting Steel Plant.
	Films and Fibres Derived from Cellulose.

Institution of Mechanical Engineers

The Naval Construction, Messrs. Vickers Armstrong, Ltd. Works of Vickers, Ltd., Barrow-in-Furness.

Brass Foundry at Barrow-in-Furness.

Construction of a Steam Turbine at Barrow-in-Furness.

S.S. "Orama." Launch Trials and Leaving on Maiden Voyage.

Launch and Trials of H.M. Airship R.80, July 19th, 1920. Constructed at the Naval Construction Works of Vickers, Ltd., Barrow-in-Furness.

The River Don Works of Vickers, Ltd., Sheffield.

Light Pressed Steel Department at the River Don Works.

Operations in the Manufacture of Magnets at the River Don Works, Sheffield.

Manufacture of Laminated Springs at the River Don Works.

Crucible Melting House at the River Don Works.

Tilt Hammer Shop at the River Don Works.

Bar and Sheet Mills at the River Don Works.

Tube Mill at the River Don Works.

Manufacture of Files at the River Don Works.

Manufacture of Ordnance, River Don Works, Parts 1, 2, and 3.

Manufacture of Shell Fuses and Cartridge Cases at the Ward End Works of Vickers, Ltd., Birmingham, Parts 1 and 2.

Aviation, Parts 1 and 2.

Vickers "Vimy" Ambulance.

Construction of Vickers "Vimy" Aeroplane at the Weybridge Works.

A Flight Over the South Coast in a Vickers "Valentia" Flying Boat.

The Vickers "Viking" Amphibious Aeroplane.

A Flight from London to Amsterdam in a Vickers "Vimy" Commercial Aeroplane.

A Flight Over London in a Vickers "Vimy" Commercial Aeroplane.

A British Key Industry. Messrs. Alfred Herbert, Ltd.

The Age of Speed. Messrs. Alfred Herbert, Ltd.

The Thirtieth Part of a Hair. Messrs. Alfred Herbert, Ltd.

Royal Speed Boat. Messrs. University Motors, Ltd.

The Making of a Motor-cycle. Ariel Motor-Cycle Co.

The Making of a Motor-cycle. Rudge-Whitworth Motor-cycle Co.

Distillation of Coal. Sensible Heath Distillation Co.

Making of a Ford Car. Ford Motor Co.

Building a Liner. Canadian Pacific Railway.

Institution of Mechanical Engineers—*Continued.*

The Making of Paper, especially of Esparto Grass: The Harvest in Africa. Inveresk Paper Co.

Making Water-tube Boilers. John Thompson.

*Hot Stuff. A Giant Vacuum Flask for Molten Metal. First National Pathe, Ltd.

*Revolution in Farming. First National Pathe, Ltd.

Swedish Electric Farm. First National Pathe, Ltd.

*Cloud Watchers. Electric Power Station Control.

*White Coal Power. Water Power in France.

*Seven-leagued Sea Boots.

Making Giant Ships' Propellors.

*Giants of Industry: Southampton Docks, Liners, and Cranes.

*Bottled Lightning: Testing Huge Transformers of a Million Volts.

*Drawing Room Steel Manufacture of Huge Frequency Furnaces.

**Asterisk denotes that a small fee for hire is required.*

The Anglo-Persian Oil Co.

Messrs. British Thomson Houston.

The Demolition and Construction Co.

Messrs. C. A. Parsons & Co.

Messrs. J. I. Thornycroft & Co.

The Welin Davit and Engineering Co.

Messrs. Hans Renold.

Messrs. Morris Motors.

Messrs. Hadfields.

Messrs. Babcock & Wilcox.

The Manufacture of the Royal Scot Locomotives. Sir Henry Fowler, K.B.E., LL.D., D.Sc.

1,200-mile Pipeline from West Texas to Chicago. Asiatic Petroleum Co.

Steel Manufacture. Federation of British Industries.

Electricity in Agriculture. R. Borlase Matthews, Greater Felcourt, East Grinstead, Sussex.

Gas Manufacture. West's Gas Improvement Co., Manister. Leipzig International Industries Fair (Gower Street, W.C.1).

APPENDIX III.

INDUSTRIAL FILMS OBTAINABLE THROUGH THE EDUCATIONAL FILMS BUREAU NOT INCLUDED IN ABOVE LIST.

Port of Bristol.

Port of Liverpool.

German Travel Films (about 20: Mediaeval Nuremberg, Winter in the Riesengebirge, A Visit to Berlin, etc.).

Round the World with a Duplicator.

The Story of Mustard.

The Romance of the Fishing Industry.

The Making of a Cigarette.

How a Graphophone Record is Made.
The Making of a Tinplate.
Tea from Plantation to Teapot.
The Leipzig Fair.
Machine Tools.
Construction of a Strong Room.
The Importance of Cutting Oils.
The Heart of an Aeroplane.
The Industries and Sports of Sweden.
The Making of a Lead Pencil.
Port of London.
The Anglo South American Bank.
Cotton Fabric Manufacture.
Making of Pottery and Glass.
Co-operation in Shopping.
Royal Agricultural Show.
Prince of Wales' Home Farm.
The History of Bovril.
A Modern Coal Mine.
Construction of a Bridge in India.
Construction of a Giant Pipeline in South America.
The Rubber Industry.
Evolution of the Steam Wagon.
Laying of High-powered Cables.
Operating Pneumatic Tools.
An Atlantic Holiday.
Across the Atlantic on a Great Liner.
Winter Sports in Austria.
The Deep Water Canal.
The Artist's Dream.
Electrical Machinery and Apparatus.
Eagles of the Sea.
Schoolboys' Exhibition.
Ideal Home Exhibition.
Lifeboat Drill on a Great Liner.
Manufacture of Gummed Paper.
The Making of a Newspaper.
The Magic of Books.
A New Romance of Scotland.
Our Dumb Friends.
A Tea Garden.
World Technics.
A Visit to Japan.
A West Indies Cruise.

By the kindness of the Western Electric Company, exhibitions of educational talking pictures were shown during the Conference in connection with Mr. Hoare's paper.

DISCUSSION.

The Chairman (Mr. A. C. Cameron) said:

A few years ago it would have seemed quite out of place to have included a discussion on films as a medium of information in education, science, and industry at a conference such as this. Its part in this year's programme and the large attendance at this meeting is a convincing proof that the film is now recognised not only as a serious art form, but as an important instrument of education and medium of information. Yet undeniably the film is developing without any constructive thought or sound policy behind it, though there is plenty of vague and often unsound criticism and a negative policy of censorship.

The Commission on Educational and Cultural Films is an effort to obtain a more constructive policy of film development, especially as an aid in teaching, but probably equally as an art form. The enquiry the Commission is now making with the co-operation of the Historical Association, the Geographical Association, the Federation of British Industries, and Government Departments of those bodies, and the film industry itself was bringing forward large quantities of useful data on which really formative suggestions could be based.

Miss Frances Consitt, who has been engaged on special research into the use of the film in teaching history, said that she wished to express her appreciation of Mr. Hoare's very comprehensive paper. She gathered from certain of his remarks that the meeting would like a little further information on the Historical Association's enquiry into the use of films for history teaching. Perhaps she might illustrate from her own experience the point he had made that nowadays, in discussing the value of the school film, no account could be paid to *a priori* argument. Investigation into the use of the film had been planned on very serious lines. In her own case, for instance, care had been taken to show the films to children with differing environments, living in different districts, and attending different types of schools. In testing, an attempt had been made to assess the real contribution of the film, not only in giving information, but in other and perhaps more important ways. Results showed that most of the popular charges against the film were based on superficial judgments. In speaking to such an audience, many members of which were practically interested in the use of the printed word, she might point out that the film stimulated the child to read; it aroused curiosity which sent the child to books for further information. In addition to the subjects mentioned by Mr. Hoare, the film might well be useful

in the study of foreign languages. Films giving the social life of the various countries whose languages were being studied would illuminate the children's texts. There was also room for enquiry into the value of films in adult education.

Mr. A. B. Blake said: Mr. Rudyard Kipling had said that everything in modern life from marriage to manslaughter depended upon the speed and cost at which men, material, and thought could be transferred from place to place. He would like to examine that statement in one of its applications by reference to a possible use of the film in industry suggested by this very interesting paper.

The author said in his paper that a film could be used for an examination of the productivity of the work, both quantitative and qualitative. The development of this sentence would afford a basis for discussion upon the whole field of science as applied to human endeavour in industry. Time permitted of the selection of just one point, the relation of speed to muscular work, a point of great industrial significance.

With the objective of cheapness, that is production with the minimum of labour, a study of industrial processes by the use of the film could be made under two main divisions: (1) a consideration of the human body in equilibrium and in motion; (2) an investigation of the influence which is due to the nature and quality of the tools and appliances used. We should then approach the answer to that all pervading question what is the maximum production of daily labour?

There is a definite relation between the cruising speed and the maximum speed of a destroyer, submarine, cruiser, battleship, engine, or machine. There is no such definite relation in the case of human beings.

[Author's Note: There is, however, a most efficient speed, one at which a given task of whatever kind, involving the doing of a given amount of external mechanical work, could be accomplished with the least expenditure of total energy.]

It has been suggested in the paper, and strikingly illustrated by the films shown, that the technique of the cinema could carry over and visually depict the conceptions of higher levels of performance in industrial work. Thus, once a process had been studied to eliminate redundant movements and to establish the unity of the worker with the machine, it would be a simple question of slowing down or speeding up the film to give a convincing demonstration of the wastefulness of unconscious or conscious restriction of output and the range of increase to a level well within the power of the average worker though rather more than double his present output.

Mr. H. Blackwood said the question of language teaching by films had been touched upon, and that raised the question of a standard pronunciation. One reason why English films did not always succeed as well in Scotland as they did in England was this difference of pronunciation and a difference in the psychology of English and Scottish audiences. The film industry was beginning to recognise this. English as used and spoken by the educated Scot was a language in itself, and they were as unwilling to accept "Oxford English" as an approved standard as English people were unwilling to accept the English of Whitechapel as a standard form.

Dr. Hutton raised a question about the importation of foreign films of scientific interest. One saw occasional foreign films of outstanding importance at conferences, but it seemed to be extremely difficult to get these imported for use for short periods free of customs restrictions. Was there any likelihood of improvement in this respect?

Mr. Cameron, replying, said that the Royal Institution had the power to issue permits for the import of such films for use by scientific societies and institutions, but unfortunately it was often dilatory in its methods.

Captain Hume referred to films dealing with animal welfare for the extension of humane education.

Mr. F. Henn gave an account of the activities of the Imperial Institute, whose cinema was established and is maintained by Empire Marketing Board funds.

Films showing typical human activities in various parts of the Empire are shown, together with those on tea and rubber planting, sugar and rice growing, mining (gold, coal, tin, etc.), and cultivation of all the principal crops grown in the Empire overseas. These are reinforced with films of the iron and steel industries, ship-building, shipping and marketing of products, together with films of animal and bird life and some excellent ones on natural history subjects—*e.g.*, the "Secrets of Nature" series of the British Instructional Films, Ltd.

In 1930 nearly 400,000 people visited the cinema, including very large numbers of school children, individually and in organised parties.

The League of Nations and the International Labour Office as Sources of Information for Economic Affairs.

By C. A. MACARTNEY.

My object in this paper is not so much to discuss the League of Nations or the International Labour Office as collecting centres of information. Both of them do, in point of fact, collect information on a very wide scale. There are very few forms of human activity with which one or the other of these two great international organs is not concerned to-day; and on every subject which comes within their purview, from mining legislation in Mexico to the position of German schools in Lithuania, a comprehensive literature is assembled as a matter of course, in the libraries, to which any serious student, in Geneva, can readily obtain access. The I.L.O., in addition, and some sections of the League proper, run very complete press-conduct services.

I want, however, to discuss to-day, more particularly, the activities of these two organisations as distributors of information. The first way in which they fulfil this function is, of course, that mentioned above, by allowing enquirers access to their libraries. On any special point, too, it is usually possible for an enquirer to obtain information direct by writing to Geneva. The I.L.O., in particular, maintains a considerable staff whose duty consists very largely in supplying enquirers with information which they desire. A considerable percentage of such enquiries comes to-day from Governments, which, when contemplating some new piece of social legislation, very frequently ask for details about analogous measures in other countries, and how they are working in practice. Many employers' and workers' organisations, as well as private individuals, are also increasingly acquiring the habit of making use of the I.L.O. in this way.

Besides this, both the League and the I.L.O. themselves publish a considerable body of literature. The I.L.O. has been, perhaps, both more systematic and more voluminous in this respect than the League. Besides its records of its own work, contained in its " official bulletin " and the report on the Annual Labour Conference, with which is published annually a survey of world developments in the form of the Director General's report to the Conference, it regularly collects and publishes in its " Legislative Series " all labour legislation passed in various countries, which is supplemented by a survey of legal decisions in labour law. These are publications which are probably of most value to international business houses with branches in different countries, enabling them to avoid the many pitfalls which foreign legislative restrictions too often prepare. The factory owner in England will be, perhaps, more interested in two other important periodical publications issued by the I.L.O.: the " Industrial Safety Survey ", now in its seventh year, and the Encyclopedia of hygiene, pathology, and social welfare, known as " Occupation and Health ".

These titles explain themselves, but to give an idea of their contents, one might, perhaps, take a recent number of each. The Safety Survey for March-April, 1931, contains an article on " accident prevention activities in individual undertakings and the possibility of comparing them internationally " based on reports from British, French, and German firms ; a technical study, from Belgium, of safety in the use of wire hoisting rope ; a list of safety institutions, associations, and museums, and of recent international conferences, reports of safety codes from Australia, Belgium, France, and Germany, and official reports from Czechoslovakia, Estonia, France, Germany, India, and Sweden ; summaries of recent articles, and reviews of recent books. The last issue of " Occupation and Health " contains technical studies on solvents, tea and coffee, and telluretted hydrogen, tin, type-founders, and iodine, in each case enumerating the diseases or other dangers commonly incurred in the trade in question, with summaries of any preventive legislation in force, and an account of what experience in different countries has shown to be the most effective preventive measures. In addition, there are special articles on ventilation and industrial hygiene in workshops. In all, " Occupation and Health " has covered about 250 trades, and there can be few manufacturers who cannot pick up some useful hints from it. A quarterly bibliography of industrial hygiene is also issued.

The most popular publications of the I.L.O. are the weekly " Industrial and Labour Information ", and the monthly " International Labour Review ". The former is compiled largely from press cuttings, and gives brief accounts of important events in the field of labour and social service : a recent number, for instance, contains surveys of what is being done in a dozen important countries to combat unemployment, including, more particularly, a summary of the interim report of the German Government's Unemployment Commission, and an account of relief works in Czechoslovakia, Australia, and elsewhere ; unemployment, migration, trade union law, agriculture, and the work of the I.L.O. itself, form some of the main subjects dealt with in this little review. The I.L.R. is a more substantial volume, containing articles of considerable length. I take a few titles of articles from recent numbers : " Some Effects of the Agricultural Depression on Agricultural Labour ", " More Mechanisation in Farming ", " The Continuous Working Week in Soviet Russia ", " The European Lignite Industry ", " Industrialisation and the Countries of the Pacific ". There are always very full book reviews, and periodical statistics. The unemployment figures for all important countries are given every month ; usually there is a comparison of the real wages and cost of living in various countries, and from time to time, wage statistics in other forms. Then there is the important series of " Studies and Reports ", which are really books, issued from time to time on certain important subjects. The questions covered by these Studies are extremely various. Perhaps the most popular have been the volumes on conditions in Russia, one of which was recently published, bringing the story up to the commencement of the Five Years' Plan. It has been very widely recognised that these studies are the most impartial and accurate of all existing literature on labour and social conditions within the Soviet Republic. Another series for which there is always a big demand is that on unemployment,

particularly on the international aspects of unemployment from 1920-1928. I pick out one or two other titles, to give some idea of the scope of these studies: "Tendencies of European Labour Legislation since the War", "Industrial Relations in the United States", "Industrial Conditions and Labour Legislation in Japan", "Hours of Labour in Industry in half a dozen Countries", "Wages and Hours of Work in the Coal-mining Industry", "White Lead", "Conditions of Work and Life of Journalists", "Migration Laws and Treaties".

Finally, in connection with the I.L.O., there is the International Management Institute, a private body, financed from America, which is undertaking research, and publishing monographs on all problems of "Taylorism" and scientific management in industry.

The I.L.O. is always obliged to stick very close to its last. Any attempt which it may make to deal with economics proper, as compared with social and labour conditions, is always very severely repressed, although the dividing line is not always at all easy to draw. Still, a working agreement seems to have been reached, and where the I.L.O. stops, the Economic and Financial Section of the League takes on.

The economic work of the League has expanded in a much more fortuitous way than that of the I.L.O. The justification of the League's economic work is contained in Article 23 of the Covenant which binds its signatories to "make provision to secure and maintain freedom of communications and of transit and equitable treatment for the commerce of all members of the League". The importance of this article was, perhaps, little realised when it was first drafted, but as time goes by, the economic and financial work of the League has taken an increasingly prominent place, and one may prophesy that it will soon overshadow most of the other subjects.

The League's Economic Section does not issue any regular publications corresponding to the monthlies and weeklies in which the I.L.O. indulges; but owing to constant demands from one side or another, the Economic and Financial Organisations have gradually begun to publish a very important series of annuals, which are of particular value to all business interests. There is a big "Memorandum on International Trade and Balances of Payments", containing assessments of the balance of international payments for twenty-two countries, with a study of world trade and summarised tables showing the imports and exports of sixty-four countries, an examination of the influence of prices on trade per head of the population, and of changes in the orientation, distribution, and composition of foreign trade, and detailed statistics of the trade of sixty-four countries, according to workers, goods (quantities and values), and countries of origin and destination. The "Memorandum on Currency and Central Banks" gives details of prices, note circulation, and currency conditions, deposits, discount rates, exchanges, gold, and foreign exchange reserves, production of and trade in gold, condition of the Central Banks, and summaries of the balance-sheets of Central Banks in nearly all European and the chief overseas countries. The "Memorandum on Public Finance" gives a review of the public balance-sheet of each country, with notes on its budget system and national and local taxation. The "Memorandum on Production and Trade" shows changes in the total and distribution of world population, basic

raw materials, and quantum and distribution of world trade. The "Statistical Year-book" includes statistics of population by age-group, occupational group, etc., with summarised statistics on trade, agricultural, and industrial production, public finance, and other subjects. It cannot be doubted that these various volumes do, in the classic phrase, "fill a gap", and an extraordinarily big one. In the course of one's work one receives the most varied requests for information, and I personally am increasingly impressed by the extraordinarily high percentage of cases in which enquirers get full satisfaction out of these volumes. The value of such detailed statistical information was fully recognised at the World Economic Conference of 1927, and it was partly due to the very strong emphasis laid at that Conference by various business interests, such as the International Chamber of Commerce, that the League, in December, 1928, arranged an International Convention on Economic Statistics, which was signed at the time, by twenty-three States, and has been put into force, up to date, between nine—there is always a certain lag before the ratifications of these Conventions come in. States ratifying this Convention agree to publish :

Annual and monthly returns of the quantity and value of their imports and exports.

Annual returns (or more frequently) of the net tonnage of vessels engaged in external trade entering or leaving their ports, according to their nationality.

Returns of population according to occupation, every ten years.

A general census of agriculture, every ten years.

Annual returns on agriculture, forestry, and fisheries.

Annual returns of mining and metallurgy.

Statistical surveys of industry and commerce, every ten years.

Index numbers of prices and cost of living.

Not the least important point about this Convention is that it lays down very careful principles for the compilation of the statistics, so that these will now be genuinely comparable, and the traps which the old figures used to contain, owing to each nation adopting its own methods, will now be avoided. The League also publishes a shorter monthly bulletin of statistics, on production, trade, and transport, price movements, finance, and labour (unemployment statistics).

This does not exhaust the information on economic and financial matters which the League produces. A great number of documents are constantly being thrown out, as it were, in the course of the League's work. Thus the Brussels Financial Conference, of 1920, contained statements on the financial situation of the countries represented at the Conference, and expert memoranda on a number of questions, including—to take three at random—the price of silver, the European Transport Situation, Relief Credits, and the Promotion of Export. The World Economic Conference, of 1927, produced an even more extensive documentation. There were reports on the economic situation of almost every country attending the Conference ; general statistical exposés on main sources of raw materials and density of population in relation to cultivable area ; on natural movements of population ; on migration in its varying forms ; on migration legislation, etc. ; a report by the International Chamber of Commerce on trade barriers ; special studies on tariff level indices ; tariff systems

and contractual methods, stability of customs tariffs, discriminatory and bargaining tariffs, dumping, export duties, marks of origin, etc.; memoranda on various industries—iron and steel, coal, cotton, shipbuilding, potash, electrical, etc.; a great number of memoranda on agriculture, and many other studies on urgent problems of the day. Other studies are compiled from time to time, in connection with specific tasks on which the Economic or the Financial Organisation of the League has been engaged. One which attracted a great deal of attention last year was the "Gold Report", issued by the Financial Committee, with details on the supply, demand, and distribution of gold and suggestions for remedial measures to ease the situation, with a number of annexes giving figures on the gold resources and estimated future gold production in the chief producing countries. Other reports have not received the publicity which was given to the attractive subject of gold. Thus, I have hardly seen any reference to what must, nevertheless, be a document of great value to all business men: a Survey, issued in 1930, of the direct and indirect means at the disposal of foreign buyers to enable them, in a number of countries, to ascertain the quality of the goods acquired by them. Another important study recently published, deals with the agricultural crisis at the present time, reviewing its causes and characteristics and the various remedial measures which have been proposed. Part II gives detailed information as to the agricultural situation in various countries.

These studies are multiplying rapidly as the economic and financial work of the League throws its net more and more widely. The League has already established its position as the proper clearing-house for absolutely reliable information on all subjects with which it deals, and as the value of such information is increasingly recognised, so the volume of it, which is regularly issued, continues to grow. The organisation for its collection and dissemination is now practically perfect, and it only remains for the world at large to increase the supply by keeping up the present rapid rate of growth of the demand.

The recent exhibition at Bumpus's, arranged by Messrs. Allen and Unwin, the official agents for League publications in this country, gave some idea of the wide scope and practical utility of this literature. It is significant that America is the principal buyer of League publications, and Great Britain comes next on the list. League publications may also be found in a good many libraries, notably that of the League of Nations Union, at 15, Grosvenor Crescent, S.W.1. The library now contains some 17,000 books, pamphlets, and documents on the League of Nations and allied subjects and claims to be the best library on the League of Nations, outside Geneva. Among other libraries which stock the official literature of the League are the Libraries of the Royal Institute of International Affairs and of the London School of Economics.

DISCUSSION.

This was discussed with the following paper by Miss M. E. Cleeve. See page 78.

The Library and Information Department of the Royal Institute of International Affairs.

By MARGARET E. CLEEVE.
Secretary, Library and Publications.

The Royal Institute of International Affairs is an unofficial and non-political body, founded in 1920, for the scientific study of international questions, political, economic and legal. Membership is confined to British subjects, the qualification being an expert or specialised knowledge of some aspect of international affairs.

Towards the fulfilment of its purposes the Institute arranges for discussions on subjects of current importance, for research by the group method into specific problems, for the publication of works on international affairs, and for the collection of information and the equipment of a reference library.

While it is with the two latter aspects of the work of the Institute that this paper is concerned, the several departments are, to a great extent, interdependent and each contributes to the value of the other. For instance, the Information Department not only has at its disposal its own records and the published material in the library and press-cutting service, but the discussions at meetings and study groups also enable it to draw upon the fund of unwritten knowledge on current events and questions which exists only in the minds of first-hand observers. The importance of this information is further enhanced by the fact that all points of view are represented in the discussions, thus enabling the widest consideration to be given to each subject.

THE INFORMATION DEPARTMENT.

The Information Department, in addition to its regular work of dealing with enquiries on political and economic matters concerned with international affairs, publishes a fortnightly *Bulletin of International News* and prepares detailed studies of specific subjects, which are issued as memoranda in mimeograph form.

The *Bulletin of International News*, edited by Mr. Hugh Latimer, contains in each issue an article on some subject of topical interest, together with a summary of events and treaties during the preceding two weeks, notes of forthcoming international meetings, and references to the texts of agreements or official correspondence appearing in periodicals. The following recent articles bearing on economic subjects give an indication of the type of material contained in the *Bulletin* and also of some of the enquiries dealt with by the department :

The National Economy of the U.S.S.R. : The Five-year Plan.	(August 14 and August 28, 1930.)
The United States of Europe.	(September 11, 1930.)
The European Agrarian Movement.	(November 6, 1930, and March 12, 1931.)

The Austro-German Customs Union.	(April 9 and June 4, 1931.)
The Movement Towards European Co-operation.	(May 7 and May 21, 1931.)
Reparation, War Debts and the Economic Crisis in Germany.	(June 18 and August 2, 1931.)
The Hoover Plan and the Financial Crisis in Germany.	(July 16 and July 30, 1931.)

Memoranda are compiled from official documents, the daily press and other sources, and provide a record of the essential facts, dates and figures concerning the subject treated. They are available at prices from 2s. in accordance with their length, and deal with such subjects as the following:

The International Steel Cartel, 1926–1931.
The Panama Canal and the Nicaraguan Canal Project.
Notes on Foreign Trade in China, 1927–1929.
The Saar Basin Territory.
The Progress of Disarmament since the Peace Treaties.

The Information Department is prepared to assist in any serious enquiry concerning international affairs. Where research is involved which cannot be dealt with by the permanent staff in the time available, arrangements can be made for the employment, on payment, of a skilled research worker at whose disposal the resources of the Department are placed.

THE LIBRARY.

The Library consists of publications bearing on international affairs, political, economic and legal, since the War, with essential reference works before that period. It comprises approximately 30,000 books and pamphlets, 323 foreign and British periodicals, 522 periodical official documents and annual reports of different countries, and 31 foreign and British newspapers.

It has been requested that this paper should elaborate particularly the sources of economic information available in the Library. Technical economic works and works on economic theory are not included, since they are readily available at the London School of Economics and in specialist libraries. The reader will find in the Library at Chatham House:

1. Official Publications.

Texts of commercial treaties and *modus vivendi*, together with commercial reports of different countries, such as the British Department of Overseas Trade Reports, the United States Commercial Reports, commercial and statistical annuals, the publications of the International Labour Office and of the Economic and Financial Section of the League of Nations.

2. British and Foreign Books and Periodicals.

The more important publications and periodicals bearing on the

international financial and economic situation and on current conditions in the different countries, including chambers of commerce reports and bank reports.

3. Foreign Newspapers.

Foreign newspapers, as mentioned above, are filed regularly in the Library.

4. Maps.

Commercial, industrial and statistical maps.

5. Press-cuttings.

The following newspapers are used for press-cutting purposes, important texts of speeches and articles being added as occasion demands from other newspapers :

Austria : *Neue Freie Presse.*
Czechoslovakia : *Prager Presse.*
France : *Le Temps.*
Germany : *Frankfurter Zeitung.*
Great Britain : *The Times.*
The Manchester Guardian.
And occasional articles from
The Daily Herald.
The Morning Post.
The Daily Telegraph.
The Observer.
Greece : *Messager d'Athènes.*
Hungary : *Pester Lloyd.*
Italy : *Corriere della Sera.*
Switzerland : *Journal de Genève.*
United States : *United States Daily.*
New York Times.

The cuttings are classified alphabetically and chronologically under countries and general subject headings, such as *Disarmament*, *Gold*, *Reparations*, etc.

The following sub-divisions under countries will give a general idea of the scope covered by the service. Those under economics and finance are given in detail as being of specific interest.

Armed Forces.
Aviation.
Colonial Policy.
Communications.
Economic and Industrial Questions :
General.
Agriculture.
Coal.
Cost of Living.
Cotton.
Customs.
Electricity.
Fisheries.

Economic and Industrial Questions—Continued :

Foodstuffs and Supplies.
Foreign Trade.
Foreign Trade Treaties.
Housing.
Iron and Steel.
Irrigation.
Labour (Hours, Conditions, etc.).
Mercantile Marine.
Motor-cars.
Oil.
Ports (Trade of).
Prices.
Railways.
Rubber.
Shipbuilding.
Social Assurance.
Unemployment.
Unrest.
Waterways (Canals, Rivers, Harbours, Navigability, etc.).

Education.
Finance :
General.
Banks.
Budget.
Loans.
National Income and Expenditure.
Pensions.
Taxation.

Foreign Policy.
Minorities.
Personal (Separate Name-index of Cross Reference in addition to actual cuttings under *Personal*).
Politics (Internal, Constitution, Parties, etc.).

The collection provides a comprehensive index to the current situation in any country, and is of the utmost value to anyone who needs to obtain a grasp of a subject at short notice.

Subject to the rules, the Library is open from 10 a.m. till 7 p.m. without charge to persons of any nationality who wish to make a study of any aspect of international affairs or to refer to works on the subject. Readers' tickets are provided for non-members of the Institute upon application to the Secretary. These tickets allow the holder to use any material available, but not to take away books or publications from Chatham House. The Library staff is prepared to assist readers in the collection of information or material for special studies.

While, as mentioned above, this paper deals primarily with the economic material available at Chatham House, it should be borne in mind that business men and others interested in economic matters often need information on the political aspect of international affairs, and that in this field the Institute, with its first-rate collection of material, is especially well equipped to supply information and answer enquiries.

DISCUSSION.

In the absence of the authors Mr. Macartney's paper was presented by Miss Norma Lewis and Miss Cleeve's by Mr. D. Graham Hutton. A number of delegates took part in the discussion which centred upon ASLIB's function as a clearing house of information as opposed to a direct source of information and led to a resolution being passed by the meeting and referred to the Final Session of the Conference. See page 94.

The Sources of Information in Agricultural Economics.

By J. P. MAXTON, M.A., B.Sc.

Economic research differs fundamentally from research in the sciences in that it deals not with organic or inorganic matter, but with the combined influence of the activities of men and women in society. There is none of the satisfying finality about the results of economic research that one finds in science. There is no building up of results bit by bit, each stone set permanently and immovably in its place. One of the fundamental ideas of science as outlined by Sir Oliver Lodge is "the general sequence of cause and effect, the inevitableness of consequences, the absence of caprice, the general trustworthiness of nature. Given all the conditions, the results must follow. There is no self-will or rebellion among the atoms, nothing incalculable in their behaviour: they obey every force which acts upon them with promptitude and precision." The research worker in a science, having established certain relationships or having had them established for him by centuries of research, can proceed to the next step with every confidence that when his back is turned and his interest is not riveted on these relationships, the atoms will not change their habits and customs and act in a totally different way from their grandfathers. And so scientific research goes on building up its permanent structure.

But the economic activities of men and women are not eternally calculable. They are not free of caprice, and habits and customs change with every generation. There is little opportunity for the research economist to establish inevitable results from given conditions, first, because human actions are or can be deliberate and, second, because the same identical conditions in which a given result was determined are never again obtainable.

It is impossible to reconstruct the economic conditions, because the method of laboratory experiment is not open to the research economist. It is true that we talk of social experiments, of which there have been many, but the economist's task is to study the every-day economic activity of society. Results obtained by placing individuals and groups of individuals into unnatural surroundings, with artificial stimulus, and imbuing them with extraordinary motives, are not without interest but they are not a reliable basis for economic reasoning, until the experiment has passed the stage of experiment and become a part of the every-day life of the community.

Social and economic conditions go on changing from generation to generation and from day to day, and they never quite repeat themselves. Economic research must follow unceasingly the changing conditions and modify its reasoning and its results.

How does this affect the supply of information and material for economic research? It means that it is virtually impossible to isolate completely one small section of the whole field of agricultural

economics and to pursue research in one narrow groove for years with the firm confidence that the conditions will remain unchanged all through the time. It is necessary to have intimate knowledge of the continual fluctuation of economic, social, and political conditions, because all of the concrete results which are obtained are only true subject to the prevailing conditions. It is a saying of my own country, "Facts are chiels that winna ding", which, freely translated, means that facts are firm, immovable, and incontrovertible. How often in argument and debate is a single solitary figure thrown at our heads with an air of finality! But facts are not so final as that, and anyone who spends his days in agricultural economics has it borne in very heavily upon him. What a host of questions have to be asked about each fact! Is it accurate? Is it relevant to the discussion? To what date and to what circumstances does it apply? It is seldom in our work that a fact is just a plain, homely, honest fact. It has to be fitted to its context or its degree of accuracy has to be weighed in relation to the use which is to be made of it. I am not questioning the need for the facts of the economic working of society. The main task of economic research is to discover them, but the more one ascertains the facts of economics and the more one tries conscientiously to interpret them the more complicated it becomes to put them in their proper perspective.

The net outcome is that in studying even the most trivial aspect of agricultural economics—*e.g.*, the cost of producing farm cheese or whether a farmer should apply x or y cwts. of manure per acre to his potatoes—it is necessary to be familiar with and take account of a large number of apparently unconnected conditions. You may not have realised that the cost of producing farm cheese is affected by the price of bacon, which, in turn, is affected by supplies of pigs in Denmark and other countries; which may, in turn, be affected by the supply and demand for butter in the United Kingdom, which may be governed by conditions in New Zealand or Russia; the latter may be influenced by the success of the Five-year Plan in raising the standard of living in Russia so that they can consume their whole production of butter; the success of the Five-year Plan may depend upon American credit; American credit may be dictated by speculative conditions in Wall Street; and so on. It sounds very like the House that Jack Built, but it is none the less a fair representation of the intricate inter-action of world conditions upon an outwardly simple little proposition in practical economics.

I do not pretend that, in our daily work, we follow the speculative activities of Wall Street before attempting to make an estimate of the cost of producing farm cheese. We have to take many shorter cuts. But the fact remains that economic research demands familiarity with a wide range of conditions and immediate access to information on the changes in conditions.

We have never set out to establish a complete library of our subject. That would be a task of considerable magnitude. Situated in Oxford, we are fortunate in being sure of getting a great deal of the material we may require in the Bodleian, and some of it in more accessible places like the Codrington, Barnett House, or College Libraries. A large part of the burden is therefore taken off our hands.

Let me try to group the type of material we require for our work. Economic research in agriculture cannot be done entirely by sitting in a library surrounded by blue books and literature of all sorts. The published economic facts of the industry are much too scarce for that. For the primary data, therefore, for many of our research studies we must go out with our caps in our hands and our hearts in our boots to extract it from the farmers, or from proprietors or managers of factories or shops. That is one of the essentials of economic research which is not sufficiently comprehended yet in this country except in the field of agriculture. Even in agricultural economics the facilities provided for this investigational work are small when one considers the time and effort required to obtain adequate results.

Our library is not concerned with material of this kind. It is filed in the appropriate departments and is available for reference when required, while, of course, the main results are incorporated in our publications. The original records, however, are an important source of material and are irreplaceable.

Our next source of material is the pamphlets and reports on the same problems issued by other research institutions, but dealing with different conditions. We must have our library of these, because they are not usually available in general libraries. They come to us for the most part automatically in the process of exchange of literature with other departments in this and in foreign countries. They may have no immediate value for us when they arrive, but it is impossible to say when they may be required either to give guidance in the technique of analysing certain types of material or in providing data which cannot be obtained elsewhere. They are, of course, the curse of a librarian's life, and there is a constant pressure to have them, especially the foreign pamphlets, consigned to the destructor or at the best to a damp cellar, in which they are ultimately destroyed by moulds. If we answer the question " What use are they ? " by the reply, " They may be needed some day", that withering glance which seems to be one of the essential qualifications for librarianship makes us feel that we are no better than magpies. Nevertheless, research pamphlets have a very important place in our work.

The next source of material is the official volumes of statistics of various kinds. Those in most frequent—indeed, in daily—use are the official statistics of the Ministry of Agriculture on acreage and numbers of livestock, on the volume of agricultural production, and on prices and supplies at markets. The same body of statistics for foreign countries is also required periodically, and for these we depend mainly on the publications of the International Institute at Rome and the statistical year-books of various countries. For statistics of British foreign trade in agricultural products we have the monthly and annual reports of the Board of Trade, supplemented by the market notes of the Empire Marketing Board and the unofficial reports of trade concerns like Broomhall and Weddell. For international trade of other countries we require a number of foreign publications. It is increasingly necessary as the field of our activities extends to have all of these quickly available in our own library. One or two figures may be wanted in a hurry or it may be necessary

to copy or make diagrams of a time series of statistics. It is a waste of time and, where clerical assistance is being used, in other ways difficult to have to go to other libraries to obtain the material.

The next source of material is journals of various kinds. This constitutes a very serious problem for us. Research workers in the various sciences do not as a rule have to take notice of articles published in journals other than the special scientific journals. But economics deals with the largest part of human activity, and practically every daily, weekly, monthly, and annual has articles dealing with the economic affairs of individuals, of industries, and of nations. Not all of these are of even temporary value, and perhaps only a few have permanent value, but it is absolutely necessary for us to know what is going on over a very wide field of economic activity, and therefore journals assume an importance for us in our work which they do not have for research workers in the physical sciences. Our use of them falls into two categories. First, there is their use for keeping abreast of current affairs. For this purpose it is necessary to have the journals circulated regularly—a service which can only be undertaken by our own library. Second, there is their use for articles which may be necessary for reference. For this purpose, bibliographies of periodical literature perform a useful function, and it is less necessary to have the journals themselves in our own keeping. With the resources of the Bodleian and Rhodes House at our disposal, we are seldom at a loss for reference material, and since we undertake a small service for agricultural economists in the form of a list of periodical articles, we endeavour to pass as much current material under regular review as we can. I am inclined, however, to think that lists of this kind are of very little value to their public compared with the opportunity of having the journals themselves circulated. Even a glance through a journal fixes some articles or some points of the articles in the mind, whereas one only rarely goes to search out an article which is listed in a bibliography, unless it seems to serve some immediate purpose.

This problem of journals in work like ours is one of enormous difficulty. We cannot afford to contribute to all journals which are of occasional value for us, and even if we did we could not find space to store them. We have to compromise in what we purchase and in what we file, and from time to time the compromises may prove to be not altogether satisfactory.

Another source of material which is useful to us is the collection of official reports—Royal Commissions, Government Committees, and Parliamentary Papers of various kinds. There is probably no subject so thoroughly blessed or cursed by commissions and committees as agriculture, and all of the reports purport to have some economic significance. Half a century's production of these takes up a great deal of space, and much of the material, especially the reports themselves, is very dead. But very often the evidence submitted to the commissions and committees, however unsystematic and sometimes not too trustworthy, is the only source from which one can derive some impression of agricultural conditions or some small aspect of agricultural conditions at a given period. We have been endeavouring, therefore, in recent years to make this body of material, especially that relating to last century, as complete as possible.

It is, I believe, one of the results of the post-war Economy Committee—known as the Geddes Axe—that very few Government Committees in the last ten years have published the oral and written evidence submitted to them. They have only published the reports. It is probably the experience of all who have had recourse to this kind of material that the reports and recommendations of commissions and committees are only of value for contemporary use—if even that—but that the written evidence very often contains descriptions and surveys of the conditions of the time which may be exceedingly valuable many years after the report itself has been forgotten or discredited. It seems regrettable that the evidence put before the various committees on agriculture since 1921—evidence of conditions prevailing during a decade of rapid change—should be lost to succeeding generations because a few pounds could be saved by not printing it. It does not matter a great deal to us what was the agreed opinion of a miscellaneous body called the Royal Commission on the Depressed Condition of Agriculture in 1895 about bi-metallism, but the descriptions of agricultural conditions in every county in Scotland, England, and Wales by the assistant-commissioners appointed by that Royal Commission are a mine of information on agriculture in the depth of another great depression. All of these reports might have been lost to us if an economy committee in the 'nineties had decided that the few shillings spent in publishing them were a luxury which the country could not afford.

I think I am correct in saying that we do not keep a collection of old blue books for the sake of the recommendations which the commissions and committees made, but for the valuable data relating to agriculture in past decades which is stowed away in the volumes of evidence and appendices.

For the same purpose and perhaps as a little academic vanity we have also the nucleus of a collection of old works on agricultural conditions—Defoe, Arthur Young, Cobbett, Arthur Marshall, etc.

Finally, there is the collection of modern books. It may surprise you to learn that out of sixteen sections of our library, only four are required for books. When you consider that our work is related on the one side to economics and economic history, and on the other to agriculture in its technical aspects, both of which have a large literature, our stock of books may appear totally inadequate, but I do not think we have ever been seriously inconvenienced. For standard works on economics and for the most recent books in the same field we can usually rely on Barnett House, from which books can be taken out. For technical works on agriculture the library of the School of Rural Economy can conveniently supply our needs.

Books on agricultural economics as a special subject are comparatively rare and do not take up a great deal of space. Also, in spite of the amount of discussion which takes place on agricultural policy, the number of books of real value on the subject is quite small. For the rest of the literature which impinges on our work, we have no very settled policy. Our small collection of books has some of the appearance of a private library which displays the changing interests and moods of the owner. I am sure it would offend the soul of a systematic librarian, because two volumes of Keynes' "Money" and an up-to-date work on the theory of statistics may be rubbing

shoulders with some little piece of journalism written fifteen or twenty years ago and now completely forgotten. But the catholic nature of the collection is not without its interest, and it does not interfere to any extent with the efficiency of our work, because, apart from a few standard books which are useful for reference, we do not depend upon our own library for all the books we require from time to time.

Such, then, is a brief outline of the sources of our material and the extent to which our own library is adapted to our needs. One might sum up briefly the main distinction between a library for economic research and one for scientific research as being that the latter is interested mainly in the work of research in prescribed fields and in certain standard books of reference, while the former must cover a wide field of current affairs in political, social, and economic activities and must have sources of information on the economic conditions in past years. The distinction is by no means trivial. It sums up all the difficulties and baffling complexities of economic research outlined in the introductory paragraphs.

Documentation in Business Organization.

By G. A. A. DE VOOGD.

This report is to be construed as expressing the writer's experience in the reorganisation of the system for dealing with the documents in the head office of a world-wide organisation, in which work the aim was to solve the various problems on more or less standardised lines ; in very large concerns with many and various sections whose working spheres are widely divergent, the advantages to be obtained from standardisation are many, and *mutatis mutandis* the same standards may likewise be applied in different establishments having nothing in common one with the other.

Views and experiences have been exchanged with others charged with a similar task and in the course of these discussions the writer became convinced of the desirability to give wider publicity to his experiences. It is not intended that the steps taken in this reorganisation are to be considered as axiomatic. On the contrary, the opinions of others engaged in this difficult work in all kinds of undertakings and establishments will be welcomed, so as to arrive by co-operation at uniformity of system.

Where mention is made in this report of undertakings and establishments, this is to be understood to cover both public bodies, such as central and local government offices, etc., and private bodies, such as commercial and industrial concerns, etc. By administration is meant that part of an establishment dealing chiefly with the documentary work, as distinguished, for example, from the actual production work in a manufactory, and the writer's remarks are here confined to the problem of organisation or rationalisation in the manner of dealing with and filing all these papers containing the data required by the management in pursuing the objects of the concern or undertaking.

Scientific management, the enormous speeding up of means of communication, the ever-increasing tendency towards amalgamation, the improved methods of reproduction of documents, to mention only a few of the developments of recent times, have all contributed to increase the volume of correspondence, documents, etc., and particularly in large establishments this has resulted in voluminous files, card indexes, libraries, and storage space.

A proper systematic arrangement of all the information contained in these documents has become an essential factor for the efficient working of an establishment, since results and data of importance for the management are laid down on paper and it is by no means an exception that decisions are taken solely on the grounds of this information. Often such papers constitute the only tangible objects in an organisation and are to be compared to the tools and machinery of an industrial concern. The choice, efficient use, proper care, and storage of tools are all factors which apply just as well in the rationalisation of methods of dealing with records.

The documents handled in the administration of an establishment are many and varied. In a report compiled by a committee of the

Dutch Institute for Efficiency appointed to study "industrial documentation," an attempt was made to define the terms " document " and " documentation." The word " document " was taken to cover everything of an instructive or informatory nature, such divided into two categories : a literary category comprising documents which are instructive from the nature of the ideas expressed therein, such as written and printed matter, drawings, photographs, etc., and a so-called corporal category comprising " documents " which serve for information by reason of their substance or form, as for example, specimens, samples, patterns, etc.

The word " documentation " is meant to convey the notion of all the documentary matters of the organisation and the handling thereof in any establishment, and it is in this sense that that word is used in this report.

This report deals particularly with the handling and classifying of documents of the literary category as defined above. This problem is all too often regarded from the point of view of sorting or filing alone, most of the literature on this subject being confined mainly to the handling of documents at rest, that is to say when they are ready to be sorted and placed in the files.

The present writer is of opinion that the trouble lies in this problem being considered independently of the organisation problem of an establishment as a whole. A well-arranged system for dealing with documents is certainly a factor of primary importance for the whole organisation, provided it is adapted to the particular nature of the organisation of the establishment in its entirety, for it is rationalisation of the latter that is the principal object. Consequently the organisation of the whole is of the first importance and this must be borne in mind if the maximum efficiency is to be obtained from the system of circulation and filing of documents, especially as regards those originating inside or from the work of the establishment itself. To put it in other words, the documentation must be a reflection of the whole organisation.

This is, indeed, felt by many organisers, as is evidenced by the attempts made to compile their own filing system, thereby overlooking or rejecting universal systems, such as the international decimal code.

In view of the many differences in the form of organisation of establishments and in the systems of documentation it is necessary, in order to attain rationalisation in the latter, to arrive at certain standards applicable to every form of organisation of an establishment of any kind.

Does the international decimal code offer such possibilities ? The present writer, on the grounds of his experience as laid down in this report, comes to the conclusion that this is so.

In a world-wide industry such as that with which the writer is engaged, the various sections are so widely divergent in their nature that the compilation of filing schemes would reach far into the fields of science and technics, and as the international decimal code already covers more or less the entire store of human knowledge and each part of it has been compiled by eminent specialists, in the writer's case there was every inducement to apply it, the more so since no other system is known which offers the same advantages as regards universal

application, flexibility, indefinite possibilities for expansion, and independence of language, and personal opinions.

The need of simplifying the handling and filing of documents, however, had to be borne in mind in order to answer practical purposes. Though in this code the subjects have been classified most scientifically the direct application of this classification to the subject matter of the documents does not give a system truly reflecting the organisation of the establishment as a whole. In other words, although it offers the possibility to classify all documents according to a uniform scheme it does not group them according to the various sections or departments of the organisation, but only according to the sciences or in bibliographic order.

It is this difficulty which has caused the international decimal code to be rejected in many establishments as being suitable only for libraries.

Now before dealing with this difficulty it is advisable to consider the difference between the requirements of a library and a filing department. In a library (the writer refers here not to a lending or circulating library, but to that of a commercial or similar establishment) the documents dealt with originate, for the greater part, *outside* the establishment itself and are collected for a purely scientific purpose in which the organisation merely determines more or less the *selection* of the subjects for the instruction or information of its several sections, without the organisation of those sections having necessarily to be reflected in the system of classifying the documents. For the library therefore, the scientific classification given in the decimal code is sufficient for the purpose.

On the other hand, in a filing department and for the internal circulation of documents originating *inside* and from the work of an establishment, it is not sufficient to apply this classification just as it is, for, as argued above, the system of documentation must reflect the whole organisation. If in the application of the decimal code this difficulty can be overcome, then it will answer one of the essential requirements. It must, however, at the same time, offer the possibility of standardisation, so that in its application in any establishment it may reflect that establishment's organisation on universal lines.

In the general analytical sub-divisions of the code according to the point of aspect the writer believes to have discovered organisation standards applicable for every establishment, large or small, public or private, and the manner of application of these sub-divisions offers the possibility of making the documentation reflect the general organisation. In the international decimal code the descriptions of these sub-divisions are naturally worded in very general, philosophical terms, but if they are converted into simpler terms of common usage it will be found that these sub-divisions appear in every organisation as parts or functions thereof.

In every establishment there are to be recognised in general the executive, finance and organising or administrative sections, departments dealing with land, buildings or equipment, and the staff department. These departments and functions are to form the basis of the organisation in classifying the subject matters dealt with by each.

The standpoint from which the central organisation surveys, as a

whole, the matter contained in all the documents, will be on the lines of the principle adopted in organising the various departments and functions of the establishment, so that it is only logical to adapt the analytical " sub-divisions communes " of the code to the aspect of the organisation as a whole.

Following the common analytical sub-divisions given in the decimal code at the beginning of the applied sciences under 6, the documents for any establishment can be grouped under more general terms according to the following subjects :

.001 The creation or the development of an establishment, experiments.
.002 The actual working, the realisation of the objects of the establishment—*e.g.*, production or trading, or the administrative execution in public departments.
.003 Finance, accountancy, costing, etc.
.004 Service—*e.g.*, facilities and complaints about products ; in the case of tax offices, complaints about collection.
.005 Arrangements and fittings of bureaux and offices.
.006 Buildings and lands.
.007 Matters appertaining to personnel.
.008 The organisation or administrative management.
.009 The establishment as an entity in relation to the outside world—*e.g.*, legislative matters.

The departments charged with the execution of the work of an establishment will, of course, vary according to the nature of the establishment, for instance, whether it is a foundry or a boot manufactory, a bank or a social welfare institution. Departments such as those dealing with the premises or personnel may be highly important in one establishment and almost negligible in another, but the fact remains that every organisation may be analysed into its component departments or functions according to the above classification, which in itself can again be subdivided at will, as provided for in the decimal code.

Thus we come to the second stage. This universal code allows of a deeper analysis sub-dividing the departments or functions into their work, conceptions, component parts, objects, etc. Following the decimal code we can obtain a classification of the subject matter which can be extended indefinitely with the development of an establishment of any nature whatever. The classification of subject matter given in the decimal code is usually found to correspond to the organisation of the department or function and in many cases shows how that organisation can be improved or supplemented ; this is not surprising considering that any subject matter which may be dealt with by a department has already been studied by experts and analysed under its appropriate heading in the international code.

Thus the second stage of sub-division also meets the requirement that the documentation should reflect the organisation of the establishment, the code forming a guide both for the classification of the subject matter and for the division of the department's work.

By way of further explanation and in order to illustrate the possibility of standardisation a list is given of some classified general matters dealt with in the personnel department of a small public body

(municipal public works) and of a large world-wide company. These are both examples taken from the files of existing bodies in Holland.

X = Aspect of the establishment.
X007 = According to the aspect of the establishment a personnel matter.

SMALL PUBLIC BODY.			LARGE PRIVATE BODY.		
X007	331	Labour and workers.	X007	331.1	Relations between employer and employee.
X007	331.1	Relations between employer and employee.	X007	331.11	Labour contracts.—Files: Promises on appointment. Terms *re* passage. Travelling. Outfit allowances. Sending out of families, etc., etc.
X007	331.14	Rules for employees.	X007	331.14	Discipline.—Files: Accepting services from outsiders. Prohibitions. Time-keeping. Dishonesty, etc., etc.
X007	331.15	Service commission, conciliation.	X007	331.15	Staff representation.
X007	331.2	Remuneration of labour, various wages systems.	X007	331.2	Salaries.—Files: While on service. When transferred. While travelling, etc., etc.
X007	331.3	Child labour, application of labour Act.	X007	331.3	Child labour.
X007	331.81	Working hours, Act for 8-hours working day.	X007	331.81	Working hours.—Files: 8-hours day. Overtime, etc., etc.

Naturally, since the private body is a larger establishment, the sub-division is more extended, but the classification of general notions is identical in both cases. Looking to the analysis for the private body, it is seen that by giving a number to a sub-division a certain line is drawn: for instance, all documents concerning staff discipline are under one number, though the contents of the individual files are somewhat different, as indicated by the headings "accepting services from outsiders," "prohibitions," "timekeeping," etc., all of which, however, come under the notion staff discipline from the aspect of the establishment. Thus the classification is made with the aid of the code as far as the general conception of the matter is concerned, whilst the details of that subject are generally arranged alphabetically. This point is emphasised because the application of the code should not result in an unreasonable extension of figures for every file. On the contrary, if the spirit of the code is followed, several files will often come under one subject, thus immediately showing a possible overlapping of files. For instance, the individual

files of members of the staff are merely indicated by X007 followed by the employee's name, all the files being arranged alphabetically.

Instead of the universal system of filing as recommended by the "Institut International de Bibliographie" of Brussels, some other systems may be adopted or a new one compiled, but in any case it will have to take account of the classification according to science and practice as offered by the universal decimal code, and if it is to be of general application it will have to answer the requirement of standardisation. When compiled for one particular establishment it will be very difficult to extend the system logically to meet all the necessary changes as the establishment grows or in the event of amalgamation with other concerns, whereas the universal code with its possibility of indefinite expansion and logical compilation is not attended with these difficulties.

Summarising it may be said that if efficiency is required in dealing with the administrative documents of a certain establishment, the organisation of the establishment as a whole can be divided into its various component parts by means of the standardised analysis given under the general analytical sub-division of the decimal code, thereby automatically taking into due account the particular nature of the establishment. The documents dealt with can first be classified according to the same principal divisions, both for purposes of circulation and for filing; thus all documents relating to staff are first sent to the staff department and after being dealt with put away in the files under staff documents.

A more detailed grouping of the documents relating to specific matters or subjects is a further step towards deeper analysis. If the decimal code is used then it is only necessary to refer to this to find the right numbering, and the double aspect of the indexing problem is then automatically taken into account, viz.:

1.—How is the document to be indexed—*i.e.*, where is it to be filed?

2.—How can the document be produced again?

When allotting a document its place in the files the same reasoning has to be followed as is applied when it is required to be produced, that is the reasoning forming the basis of the code numbering.

In practice other problems also occur from the point of view of the organisation. For instance, a geographical or a professional division may be required, or even both, in addition to a geographical division of all matters regarding the organisation and execution of the work of an establishment, it may be desired to have a division according to juridical, technical, and accountancy matters, etc.; further it may be asked which division is to have precedence. In the sorting and indexing of the documents on the principle described above these requirements can easily be met.

Another question occurring in rationalisation is whether the documentation is to be centralised or decentralised, depending on the nature of the establishment concerned. In the writer's opinion the answer depends on the extent of the organisation, in how far the work is split up into sections and departments and whether the various departments are all situated in one building or spread some distance apart. Decentralisation is not essentially the opposite of centralisation but rather a further step in the latter. With decentralisation, however, there must be central supervision; the documentation belongs to

one whole and is not a single part of the organisation, and as such it should be regarded. This does not mean to say that in case of decentralisation the documents pertaining to a certain section or department, their tools so to say, are not to be filed and placed in close proximity to that department, since the classification described above guarantees that the files in each department form an integral part of the structure of the whole organisation and therefore facilitates a comprehensive survey of the sum total. Decentralisation without central supervision, however, leads to chaos and disintegration instead of unity, and is uneconomical.

A further question in the handling of documents is whether they are to be dealt with by the various departments concerned in succession or simultaneously. When documents are received relating to a certain subject and these have to be attended to by several departments, the question is whether the documents are to be circulated among and dealt with by those departments in succession (in a large establishment control over such circulation is necessary) or whether they are to be multiplied (*e.g.*, photographed) or copied out—or arrangements made for additional copies to be sent with the original—so that they can be dealt with by all departments concerned at once (a rubber stamp can be used indicating which is the main department to deal with them and which are the advisory departments).

Another point is whether documents are to be entered in a register or whether this can be dispensed with, relying on the indexing alone. In practice the document should either be in the department dealing with its contents or put away in the files under its subject so that it should always be in a definitely allotted place.

Reproduction methods, copying of letters, filing of maps, drawings, and photos, standardisation of forms and sizes, are a few more of the numerous problems, large and small, met with in rationalisation work.

The object of this report, however, is to show that the rationalisation of documentation is more a problem of organisation than one of registration or indexing, and to invite exchange of ideas in regard to the solution hereby offered.

The psychological side of the question is also a point not to be overlooked. Contrary to the general belief which prevailed up to a few years ago, the personnel engaged in documentation work, and particularly those in charge, should be first-rate men of high intelligence and it would be recommendable to have this subject included in the curriculum of all commercial schools and colleges. Especially in large establishments the problem of rationalisation in documentation covers a wide range of the sciences and industry and the time is long past that the scientist stood apart from the industrialist. Nowadays in large industrial concerns scientific research takes just as important a part as the work of the engineer and business man, and the scientist's work laid down on paper has to be arranged in the organisation by those charged with the work of documentation.

In addition to a natural propensity to order and arrange things, other qualities required in these employees are a certain encyclopaedic mind, a feeling for organisation problems and a good idea of the functions performed by the various departments.

NOTE.—In the absence of Mr. de Voogd this paper was presented by Mr. F. Donker Duyvis.

The Russian Five-year Plan in its special relation to British Industry and Commerce.

Dr. E. Shenkman did not present a paper, but gave a short address, after which he answered questions.

The chair was taken by PROFESSOR GILBERT MURRAY. He said that it was of enormous interest that a nation or the Government of a nation should have a definite plan which it endeavoured to carry through to the end. Most Governments lived from hand to mouth; nations did what they wanted at the time. It was very rare for a Government to have so much power that it could concentrate on a definite course of action extending over several years. There was, however, always one caution which had to be borne in mind. There was a danger in supposing that Russian organisation could be an example to our own country. He wished to mention one or two facts which illustrated the differences between the problems of the two countries. What had happened to England was that she had lost her markets. Once England had the whole world as its market; America and Germany had now been practically lost, and the confusion existing in India and the East generally had deprived England of another important market. England, it must be remembered, was a small, over-populated, highly-industrialised island. When it was possible to sell to all the world, we were very prosperous; when these markets were cut off, suffering was inevitable.

We are eminently international. As the centre of world finance, every financial shock has hit us. Our present position is due to a rather fine tradition of helping distressed nations by means of loans. We are suffering from an enormous debt which we are religiously paying; Russia has cancelled hers. There is another point. More than any country in the world, if there is a tradition of which we are proud it is that of personal freedom; we are not accustomed to let governments interfere with us. There is no place where you see this tradition of freedom carried to such a ridiculous state as in this university. There is nothing to tell me what I am going to lecture about next term. There is nothing to compel anyone to do anything. But as we are on the whole rather reasonable people we manage to make our unreasonable constitution work.

Russia had not the load of debt; it had a vast territory and a population of 130,000,000. If ever the world got normal again, he believed that Russia would be one of the richest countries in the world. It had a tradition of despotic power which was lacking in this country. In the present time the study of the Five-year Plan was of academic interest only. It did not convey any example to us.

DR. SHENKMAN said that the policy of Soviet Russia has never been in such a state of confusion as it now is. It is fully realised that the methods by which the Five-year Plan has been carried out will have to be thoroughly overhauled, and that the expected increase in production will never alleviate the situation if the goods produced are not of such a quality as to be saleable.

The peasantry is again giving trouble, and the mechanisation of distribution is generally regarded as unsatisfactory. The confusion which exists in Russia cannot be fully appreciated because the leading capitalist countries are in no less a state of confusion with regard to their economic policy. But there is no doubt that very important and fundamental changes must take place in the Russian economic policy. It is not enough to take recourse to certain capitalistic methods like different ratios of pay, such as have recently been introduced by Stalin himself. It is not enough to give up the levelling tendencies which have hitherto prevailed over the economic and social policy of Soviet Russia in carrying out the Five-year Plan. The recourse to capitalist methods must go deeper, and that will involve the relationship between social classes such as workers and peasants and relationships with other countries.

Until such changes had taken place, most people would agree with the business men and financiers who were very cautious in extending credits to Russia and looked with little sympathy on Germany, who was extending without any limit her Soviet commitments. The fact was that the problem of supplying the townspeople with food, which it was imagined had been solved by the collective farm plan, was just as unsolved to-day as it was two and a half years ago. The peasants in the beginning resisted the collectivisation plan, but during the last year they had come into the collective farms quite willingly. Now the collective farms were showing as much unwillingness to give up that portion of grain appointed by the state as "surplus" as the peasants had before.

The labour problem was no less difficult, and had not been solved at all. The Soviet Government had managed to mobilise a certain amount of labour, but the workers were unskilled; they had never had any experience of work in factories, and they were absolutely unable to manage the fine machinery imported from England, America, and Germany. The quality of the goods as the result of unqualified labour and the lack of proper management and supervision was very, very poor. This explained the extraordinary scarcity of goods which prevailed in Russia.

Although the Soviet Government is accustomed to accuse Great Britain and the City of London of blockading Russia from a financial and economic point of view, actually no other financial centre in the world had helped it so much to carry out its plans. According to his calculations—based on the official Soviet statistics—the total indebtedness of the City of London to Soviet Russia at the middle of 1931 amounted to £45,000,000 out of a total indebtedness of £110,000,000. If the attitude of the City of London in recent times has stiffened at all in its attitude to Russia, the responsibility for this fact lies in the way in which the Five-year Plan has been carried out.

Final Session.

At the final session of the Conference the chair was taken by Dr. R. S. Hutton.

The following resolution, which, on the motion of Mr. B. M. Headicar, seconded by Mr. H. L. Robinson, had been passed by an earlier meeting, was adopted unanimously and referred to the attention of the Council:

> That this meeting, recognising that the indication of the sources of information is one of the prime functions of ASLIB, considers it of the utmost importance that members should be able to obtain direction to the many (especially unpublished) documents compiled by various institutions and societies throughout the country, and recommends that, with the co-operation of the institutions concerned, an index of this material should be available at ASLIB headquarters.

On the proposal of Dr. R. S. Hutton, the best thanks of the Conference were offered to the Principal and Fellows of Lady Margaret Hall for their permission to hold the Conference there. Votes of thanks were passed also to the Bursar and the College Staff, to the Directors and Mr. F. B. Ransford of the Western Electric Company, to Miss Locket of the British Instructional Films, and to the authors of papers, the chairmen and stewards of meetings.

The proceedings of the Conference then ended.

Report of the Sixth Annual General Meeting.

The Sixth Annual General Meeting (fourth since incorporation) of Members and Associate Members was held at five p.m. on Saturday, September 19th, 1931, at Lady Margaret Hall, Oxford.

Present : Sixty-two Members and Associate Members were present.

Chairman : Dr. R. S. Hutton (Chairman of the Council of the Association) acted as chairman of the meeting.

ITEM 1.

The minutes of the Fifth Meeting, having been circulated, were taken as read. It was agreed that they should be confirmed and signed as correct by the Chairman.

ITEM 2.

The audited Statement of Accounts had been circulated. On the motion of MR. H. L. JACKSON, seconded by MR. A. MARKHAM, they were accepted.

ITEM 3.

On the motion of MR. J. MCADAM, seconded by MR. A. MARKHAM, it was resolved unanimously that Messrs. West and Drake be re-appointed auditors to the Association.

ITEM 4.

The CHAIRMAN announced that Colonel E. L. Johnson and Mr. A. Parker had retired from the Council. He reported that Mr. Humphrey Milford had been co-opted as a member by the Council since the last Annual General Meeting. No new nominations had been received, and it was resolved unanimously that the Council be re-elected as follows :

H. W. Acomb, M.A., National Liberal Club.
A. Brammer, Association of Supervising Electrical Engineers.
Theodore Besterman, Society for Psychical Research.
F. B. Bourdillon, C.B.E., Royal Institute of International Affairs.
J. J. Eaton, *The Yorkshire Post.*
A. P. M. Fleming, C.B.E., M.Sc., M.I.E.E., Metropolitan-Vickers Electrical Company, Ltd.
H. Vincent Garrett, Rowntree and Company, Ltd.
B. M. Headicar, F.L.A., London School of Economics and Political Science.
F. A. Hoare, National Union of Teachers.
C. E. Hobbes, International University Society.
J. E. Hodgson, Royal Aeronautical Society.
L. Honeyburn, Imperial Chemical Industries, Ltd.
Miss D. W. Hughes, Career Advisory Bureau and *Journal of Careers.*
R. S. Hutton, D.Sc. (Director, British Non-Ferrous Metals Research Association).
Miss A. L. Lawrence, M.B.E., M.A., LL.B., British Medical Association.
Colonel Sir Henry G. Lyons, D.Sc., F.R.S., The Science Museum.
Humphrey Milford, Oxford University Press.
F. C. Mitchell, London Press Exchange, Ltd.
Lieut.-Colonel J. M. Mitchell, O.B.E., M.C., M.A., Carnegie United Kingdom Trust.
Brigadier-General Magnus Mowat, C.B.E., M.Inst.C.E., M.I.Mech.E., Institution of Mechanical Engineers.

Colonel Sir Frederic Nathan, K.B.E.
Lieut.-Colonel L. Newcombe, T.D., F L.A., National Central Library.
Mrs. C. S. Orwin, M.A., Agricultural Economics Research Institute.
J. G. Pearce, M.Sc., M.I.E.E., British Cast Iron Research Association.
A. F. Ridley, F.L.A., British Non-Ferrous Metals Research Association.
J. C. Stobart, British Broadcasting Corporation.
A. P. Thurston, M.B.E., D.Sc., F.R.Ae.S., M.I.A.E.
G. B. Willey, A.R.S.M., F.I.C., Hadfields, Ltd. (Research Department).
J. C. Withers, Ph.D., British Cotton Industry Research Association.

ITEM 5.

On the motion of DR. R. S. HUTTON, Mr. H. T. Tizard was re-elected President of the Association by acclamation.

ITEM 6.

On the motion of DR. R. S. HUTTON, seconded by COLONEL SIR FREDERIC NATHAN, Miss A. L. Lawrence was elected Honorary Secretary of the Association.

ITEM 7.

On the motion of DR. W. BONSER, seconded by MR. A. MARKHAM, Colonel Sir Frederic Nathan was elected Honorary Treasurer of the Association. A vote of thanks was passed to the retiring Honorary Treasurer, Brigadier-General Magnus Mowat, and the Secretary was instructed to convey the members' deep sympathy for him in the death of his mother.

ITEM 8.

DR. R. S. HUTTON then presented the Report on the Year's Work of the Association (see page 13) and a discussion followed, in which the following delegates took part: MR. RICHARD HAXBY, MR. H. L. ROBINSON, MR. THEODORE BESTERMAN, MR. B. M. HEADICAR, MR. J. J. EATON, MR. J. MCADAM, MISS E. M. FORCEY, MR. B. C. CURLING, MR. P. C. BURSILL, and COUNCILLOR W. H. SMITH. On the motion of DR. W. BONSER, seconded by MR. S. W. GIBSON, the report was adopted.

This concluded the business of the meeting.

ASSOCIATION OF SPECIAL LIBRARIES AND INFORMATION BUREAUX.

INCOME AND EXPENDITURE ACCOUNT for the YEAR ENDED 30th JUNE, 1931.

Dr. EXPENDITURE. Cr. INCOME.

EXPENDITURE	£ s. d.	£ s. d.
To General Expenditure—		
Salaries	494 6 3	
Rent, Light, and Phone	84 19 9	
Insurance	2 7 0	
Printing, Stationery, Postage, and Office Expenses	192 16 5	
Reference Books	3 3 10	
Travelling Expenses	21 16 1	
Subscriptions	5 0	
Press Cuttings	2 2 0	
Audit Fee and Accountancy	8 8 0	
Income Tax and Corporation Duty	4 6 8	
Depreciation of Furniture and Fittings	4 12 7	
		819 3 7
„ Cost of 1930 Conference—		
Conference Expenses	267 18 8	
Printing of Conference Report	122 10 0	
		390 8 8
„ Expenses *re* Translators' Panel		242 13 8
		£1452 5 11

INCOME	£ s. d.	£ s. d.
By General Receipts—		
Membership Subscriptions	695 19 9	
Bank Interest	4 12 7	
		700 12 4
„ Conference Receipts—		
Fees and other Receipts	340 18 1	
Sale of Reports	15 3 2	
Advertisements in Report	21 2 6	
		377 3 9
„ Translators' Registration Fees		194 12 0
„ Balance, being Excess of Expenditure over Income for the Year, carried to Balance Sheet		179 17 10
		£1452 5 11

BALANCE SHEET - 30th JUNE, 1931.

Dr.

LIABILITIES.

	£ s. d.	£ s. d.
To Sundry Creditors		11 5 6
„ Subscriptions in Advance		15 15 0
„ Directory Reserve—		
As at 30th June, 1930	228 1 6	
Sales to 30th June, 1931	22 2 5	
	250 3 11	
Less Transferred to Working Capital	150 0 0	
		100 3 11
„ Working Capital—		
As at 30th June, 1930	191 10 3	
Less Balance of Income and Expenditure Account	179 17 10	
	11 12 5	
Add Transferred from Directory Reserve Account	150 0 0	
		161 12 5
		£288 16 10

Cr.

ASSETS.

	£ s. d.	£ s. d.
By Cash at Bank—		
On Deposit Account	100 0 0	
On Current Account	144 16 1	
„ Cash in Hand	2	
		244 16 3
„ Sundry Debtors for Directories and Reports sold, etc.		3 12 9
„ Furniture and Fittings—		
As at 30th June, 1930	46 5 5	
Less Sale during year	1 5 0	
	45 0 5	
Less Depreciation at 10 per cent. p.a.	4 12 7	
		40 7 10
		£288 16 10

We have audited the above Balance Sheet and have obtained all the information and explanations we have required. In our opinion such Balance Sheet is properly drawn up so as to exhibit a true and correct view of the Association's affairs according to the best of our information and the explanations given to us and as shown by the books of the Association.

July 17th, 1931.

8, New Court, Lincoln's Inn, London, W.C.2,
and at 16, Market Place, Reading.

(Signed) West and Drake, *Chartered Accountants.*
(Signed) Magnus Mowat, *Hon. Treasurer.*
(Signed) R. S. Hutton, *Chairman of Council.*

Reports.

Following the Annual General Meeting reports were received from the following organisations whose work is connected with and of special interest to members of ASLIB:

THE NATIONAL CENTRAL LIBRARY.

The main points in connection with the work and development of the National Central Library of special interest to members of ASLIB are the following:

(1) New Headquarters. The Carnegie Trustees have made a munificent grant of £50,000 to enable the library to purchase and equip large freehold premises in the neighbourhood of Gower Street. These premises will provide ample office accommodation and adequate space for the development of the Information Department and the housing of the various union catalogues which the library will have to house in the future. It will also provide storage space for considerably over a million volumes. It is hoped that the new building will be ready for occupation next summer. The acquisition of this new building will remove one of the great difficulties under which the library has been working for the past few years.

(2) Information Department. The Information Department of the library, which is being financed out of the grant of £3,000 a year from the Treasury, is now established. A special staff has been appointed and the necessary bibliographical tools are being collected. This department will link up with the work of the National Centres for Bibliographical Information in various countries in Europe. There is little doubt that the establishment of this department will enable the library to trace and arrange for the loan of many books and periodicals which in the past have been unobtainable. The Enquiry Office at the University of Birmingham, which has for the past few years been under the control of the Joint Standing Committee on Library Co-operation, will be transferred to the Information Department of the Central Library on October 1st. There will then be only one centre for Great Britain to which enquiries for books unobtainable in local libraries should be sent.

(3) Union Catalogues. The union catalogue of the Outlier Libraries is making slow but steady progress. Thirty-eight of the Outlier Libraries are contributing copies of their accessions cards. Other Outlier Libraries, notably the London School of Economics and the Royal Empire Society, are publishing valuable printed catalogues. The union catalogue of the London Borough Libraries, which to a large extent owes its origin to ASLIB, is making excellent progress, over 300,000 entries having been incorporated in the catalogue. Many of these, however, are duplicate entries, as the editorial work on the slips has not yet been done. A complete list of the periodical publications in all the London Borough libraries has also been compiled. Already the catalogue has proved of considerable value, and when it is completed it will form one of the most important bibliographical tools in Great Britain. Within the next few months the nucleus of another union catalogue of great importance will be housed in the Central Library. This will be a combined catalogue, in sheaf form, of the carbon copies of the union catalogues of the Northern and the West Midland Regional Systems. When completed, this catalogue will contain an entry for every non-fiction book in the nine counties covered by these two systems.

(4) Outlier Libraries. There are now 113 Outlier Libraries associated with the Central Library. Seventy-three of these are special libraries, the remainder being urban and county libraries. The total stock in these libraries is approximately four and a half million volumes, including some 26,000 sets of periodicals. Of the 5,196 volumes for which these libraries were asked during the year 1930–31 no less than 4,914 were lent. Among the more recently added Outlier Libraries are thirteen of the libraries of the Research Associations. These libraries, though small, cover important ground which in most cases is not adequately dealt with elsewhere.

(5) Regional Library Systems. During the year 1931 the first three fully-organised Regional Library Systems have been established. These are the Northern Regional System, covering the four counties of Cumberland, Durham, Northumberland, and Westmorland; the West Midlands Regional System, covering the

counties of Hereford, Shropshire, Stafford, Warwick, and Worcester; and the Welsh Regional System, covering the whole of Wales and Monmouthshire. The majority of the libraries of all types in these three areas are co-operating. Union catalogues are being compiled and are being housed at the Regional Bureaux. The Newcastle Literary and Philosophical Society acts as the Regional Bureau for the Northern System, the Birmingham Public Library for the West Midland System and the National Library of Wales, assisted for South Wales by the Cardiff Public Library, acts for the Welsh System. The general idea of these Regional Systems is that local sources should be tapped before the National Central Library is asked to lend books, the great advantages being that some books will be supplied more speedily, the resources of all libraries will be vitalised, and the Central Library will not be asked to buy books which are lying idle on the shelves of some local library. The money thus saved by the Central Library will be used for the purchase of those books which are not available locally. Applications for books in the regional areas are sent by the local librarian to the Regional Bureau. If the union catalogue (so far as it exists at present) shows that a copy of the book required is available in one of the libraries in the regional area, the application is forwarded to that library, and the book is sent direct to the borrowing library. If no copy of the book required is available locally, the application is forwarded by the Bureau to the National Central Library, which deals with it in the ordinary way.

THE JOINT STANDING COMMITTEE ON LIBRARY CO-OPERATION LIST OF PERIODICALS.

The entries, to a total of some 80,000, for the union catalogue of periodicals in university libraries have now been sorted into alphabetical order, and form a reference tool of the greatest importance. The whole of the work on this catalogue has now been completed with the exception of a portion of the Bodleian Library and a few of the smaller college libraries. It is hoped that this union catalogue will be published within the next year or two. It is estimated that the completed catalogue will contain some 30,000 separate entries covering the periodical publications, of all dates and on all subjects, in every university and university college library in Great Britain and Ireland. Each entry will give (1) the title of the periodical, (2) the place of publication, (3) volume numbers, (4) dates, and (5) location marks giving exact details of the whereabouts of complete or incomplete sets of the periodical.

THE LONDON SCHOOL OF LIBRARIANSHIP.

Dr. Baker, Director of the School, gave a verbal report on its work, dealing particularly with the new course for special librarians. Some details are given in the Report on the Year's Work of ASLIB. See page 13.

NEDERLANDSCH INSTITUUT VOOR DOCUMENTATIE EN REGISTRATUUR.

The Institute has a service for bibliographic information, mainly technical and scientific. It acts as a clearing house for this information and does not collect such information centrally.

Further, the Institute supplies photostatic copies of periodical literature. For that purpose it has two Dutch photostatical services at its disposal. Moreover, the Institute has connections with foreign services.

The Dutch Institute will feel honoured to be of any service to ASLIB members.

An International technical bibliography, the "Repertorium Technicum," is published by the Institute with the help of foreign colleagues. Further, a small bibliography of Dutch technical literature is published monthly.

The Institute is the seat of the "Commission Internationale de la Classification Decimale," and gives it co-operation in working out the Universal Decimal Classification. As such it co-operates with the British Society of International Bibliography.

The Institute works in close relation with the "Nederlandsch Instituut voor Efficiency" (Dutch Institute for Scientific Management) and partakes in the organisation of the yearly conferences of that Institute. It gives advice on office filing methods, in so far as standardised classification methods are concerned.

A list of sources of information in Holland is compiled by the Institute. Further, the Institute issues pamphlets on various topics regarding documentation.

COMMISSION INTERNATIONALE DE LA CLASSIFICATION DECIMALE.

Summary of the Fifth Report.

The previous reports have appeared in earlier ASLIB Conference Reports.

The Fourth Volume (containing the alphabetical index) of the Universal Decimal Classification has not yet appeared. Owing to lack of financial means the work advances only very slowly.

A German edition of Section 621.3 (Electrotechnics) of the Universal Decimal Classification has appeared. It contains various extensions. An abridged edition of the decimal classification in the German language is in preparation. It will be more extended than the French abridged manual and may serve for the classification of middle-sized general libraries. The Imperial Agricultural Bureaux have issued a memorandum on the use of the Universal Decimal System, including the English translations of various sections of biology and agriculture. The biological sections especially contain important official extensions of the Universal Decimal Classification. The "Bureau International d'Education" of Geneva issued a "Plan de Classification de la Documentation Pédagogique" which is still open for criticism and not yet definitely adopted. Manuscript classification extensions have been prepared in Germany on ceramics and in Great Britain on meteorology.

In his report Mr. Donker Duyvis deals also with the preparation of the so-called concordance-lists between various existing classifications and the Universal Decimal Classification. He emphasises that concordance-lists as a rule should only be used to transfer *provisionally* the data classed by some special classification into the Universal Decimal Classification. The definite allotment of the Universal Decimal Classification number always requires superior control, by directly relating the provisional classification number to the Universal Decimal Classification manual.

NOTGEMEINSCHAFT DER DEUTSCHEN WISSENSCHAFT.

The Notgemeinschaft der Deutschen Wissenschaft has noted that increasing support has been given abroad to the scheme, which has been in contemplation for years and has now been put into operation for the first time, for systematically supplying German libraries with foreign publications. The whole scheme has, however, to be very much restricted owing to the diminution of available funds. Future activities of the Notgemeinschaft will therefore have to be ruled in accordance with the following points: (1) At the present time the task of the Notgemeinschaft can no longer extend to supporting all university libraries as *universal* libraries. (2) The Notgemeinschaft can only support the Prussian and Bavarian State Libraries with literature covering all branches of science. (3) Instead of contributing to the university libraries as universal libraries it has been decided to help in the first instance the places where there are special collections, on the understanding that these privileged libraries must freely act as lenders to the other college libraries. (4) For the general information of the science faculties of individual universities it may be stated that the Notgemeinschaft will endeavour as far as possible to maintain the supply to university libraries of journals, etc.

For the rest the Notgemeinschaft is trying to make up for the lack of funds by increasing its activity in arranging exchanges. It cannot, however, be denied that the reduction in the allocation of funds and the resulting diminution in the number of free copies available of German scientific works published with the support of the Notgemeinschaft is giving rise to great difficulties.

VERMITTLUNGSSTELLE FUR DEN TECHNISCH-WISSENSCHAFTLICHEN QUELLENNACHWEIS.

At the last year's conference of the Association of Special Libraries and Information Bureaux a report was submitted on the creation of the "Vermittlungsstelle fur den technisch-wissenschaftlichen Quellennachweis" (Agency for Information on Sources of Technical Literature) in Berlin. (See Report of Proceedings of the Seventh Conference, pages 90–93.) It was stated therein that this agency is to act as a clearing-house for any information concerning technical literature. The agency works in such a way that all enquiries it receives are referred to the organisations affiliated for direct reply. Since last year the number of the affiliated information organisations has increased from 96 to 145.

Recently the Information Agency issued its first publication in the form of a " Ubersicht " (Survey). This includes the names and addresses of all the affiliated information organisations giving information as to their sections of engineering, their libraries and collections, their scientific and bibliographical publications, and, finally, their specially-established facilities for information service. It may also be seen from this " Survey " that the literature of practically all sections of engineering is made accessible by the Information Agency. This agency is steadily enlarging its field of activity in the way that information organisations for sections of engineering not previously included, which were before treated by larger institutes, are now affiliated.

In order to give a good survey, institutes of the same technical character were grouped, so as to facilitate finding a way to the sources. The chief groups of this system are :

I. Production.
   (1) Production of mineral raw materials.
   (2) Production of vegetable and animal raw materials.

II. Working Methods.
   (1) Working technique ; technology.
   (2) Working science ; organisation.

III. Manufacturing.
   (1) Fields of manufacturing, arranged after engineering materials.
   (2) Fields of working, arranged after purpose.

IV. Power.
   (1) Natural sources (water, wind, sun).
   (2) Generated (steam, internal combustion, electricity).

V. Traffic.
   (1) Communication engineering.
   (2) Transport (traffic on land, water, and in the air).

The Universal Decimal Classification has not till now been made use of for the systematical division of the information organisations, owing to the fact that the objects of enquiries were usually too vague for easy finding by this system. The systematical survey chosen enables every interested person to pick out without any difficulty that information organisation, which seems to be best qualified to handle his enquiry, and then to approach it direct. Thus the Information Agency is saved a lot of work and needs only to forward to the affiliated organisations such enquiries as do not find the direct way to them.

It is planned for the future to establish a more ramified division, by asking the affiliated organisations to lay down a more detailed survey of the scope of their work. In this way it is intended to arrange at the Information Agency a general plan of the engineering sciences in the shape of a very detailed card index system, which is to serve extensively for accurate orientation and finding out all sources of technical literature.

UNION FRANÇAISE DES ORGANISMES DE DOCUMENTATION.

Following a meeting of members of the Société de Chimie Industrielle, called by Monsieur Paul Otlet in 1924, a conference was held with a view to studying the means of establishing, in France, co-ordination between the Offices de Documentation in various branches of knowledge.

Taking into consideration the work and objects of the Congrès des Ingenieurs Civils, the Office National des Recherches Scientifiques et Industrielles et des Inventions, the Congrès Internationaux des Bibliothécaires, and the Conférences de l'Institut International de Bibliographie, those present at the conference decided to undertake the necessary steps to create a Fédération Française des Offices de Documentation.

Many amongst them represented important Organismes de Documentation. Monsieur Bolondin, Director Fondateur de le Revue Générale d'Electricité ; Monsieur Bourrell, Chef de la Documentation de la Société des Transports en Commun ; Monsieur Cantinelli, Administrateur de la Bibliothéque Sainte-Geneviève ; Monsieur Cheneaux, Controleur Principal de la Marine ; Monsieur

Coyecque, Président de l'Association des Bibliothécaires Français ; Monsieur Jean Gerard, Secretaire Général de la Federation Nationale des Associations de Chimie en France, du Comité National de Chimie, Administrateur de *Chimie et Industrie*, organe de la Société de Chimie Industrielle ; Monsieur Morel, Président de la Section de Documentation du Comité International des Bibliothécaires ; Monsieur Otlet, Secrétaire Général de l'Institut International ; Monsieur Sustrac Secrétaire du Bureau Bibliographique de France ; Monsieur Bayle, Directeur du Journal *La Librarie*.

It has taken seven years to put the proposal into execution. During the year 1931 the Société de Chimie Industrielle decided that the time had come when it could be realised, and it took the initiative to call together, on April 13th, representatives of the following organisations : Association des Bibliothécaires Français, Association Nationale d'Expansion Economique, Centre International de Synthèse, Chambre de Commerce de Paris, Comité National de l'Organisation Française, Confédération Générale de la Production Française, Office Central de l'Acétylène et de la Soudure Autogène, Office de Documentation Législative et Sociale de la Faculté de Droit de Paris, Service de la Presse Etrangère du Ministère des Affaires Etrangères, Société des Agriculteurs de France, Société de Chimie Industrielle, Société Française des Electriciens, Société des Ingénieurs Civils, Société de Legislation Comparée, Union des Industries Chimiques, Union des Syndicats d'Electricité.

This meeting provided the opportunity to set up the necessary liason machinery. A certain number of principles were laid down at meetings which followed on April 24th and May 5th. Rules were considered and were adopted on July 22nd. The Union Française des Organismes de Documentation (U.F.O.D.) has for its objects to compile an inventory of French organisations which collect and disseminate information concerning all branches of human knowledge, to encourage co-operation between these organisations, to co-ordinate their activities, to facilitate the systematic use of all sources of information, to establish relations with foreign bodies pursuing kindred objects. It forms a permanent connection between Organismes de Documentation which decide to work in co-operation. The organisations affiliated divide between themselves work in the various fields of special information and endeavour to make the necessary arrangements to cover the whole ground.

The U.F.O.D. extends its activities over the whole of France, her colonies and protectorates. It is endeavouring to establish there secondary centres kept in constant touch with the national centre.

The U.F.O.D. consists of *ex-officio* members, ordinary members, and associate-members. Ordinary members consist of public and private institutions, associations, etc., possessing special libraries, information bureaux, etc. Associate-members (commercial organisations, etc.) have no voice in the government of the Union. The U.F.O.D. is governed by an Administrative Council of thirty-six members, twelve being *ex-officio* and twenty-four elected for three years at the general meeting.

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